VIRGINIA EDITION

MAURY'S MANUAL OF GEOGRAPHY

University Publishing Company

J.C. Branner

[illegible]

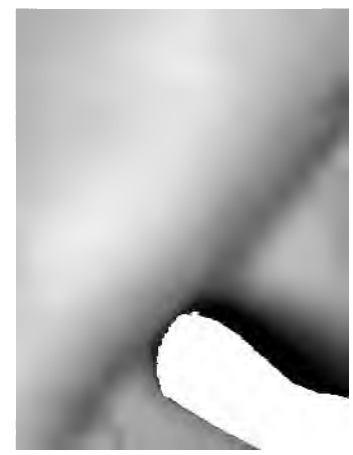
[illegible]

[redacted]

J. C. Branner

August 7, 1906

From the [illegible]




1 GREEK
2 EAST INDIAN RAJA
3 ANGLO-SAXON
4 ARAB SHEIK
5 HEBREW
6 SCOTCH HIGHLANDER
7 RUSSIAN
8 SPANIARD
9 CHINESE
10 ESKIMO
11 PHILIPPINO
12 MAORI
13 SIOUX
AMERICAN INDIANS
14 ZUNI
15 NUBIAN
16 KAFFIR
17 AFRO-AMERICAN
RACE TYPES
CAUCASIAN 1-8
MALAY 11-12
MONGOLIAN 9-10
ETHIOPIAN 15-17.

THE MAURY GEOGRAPHICAL SERIES

NEW COMPLETE

GEOGRAPHY

BY

M. F. MAURY, LL. D.

Author of "Physical Geography of the Sea," and late Superintendent of the National Observatory, Washington, D. C.

REVISED

NEW YORK • BOSTON • NEW ORLEANS

UNIVERSITY PUBLISHING COMPANY

1906

MAURY'S GEOGRAPHIES.

NEW PRIMARY GEOGRAPHY:

Designed for Primary and Intermediate classes. The style is simple and interesting. The text presents the best methods of instruction. The Maps are new, and the Illustrations are all reproductions of new photographs.

NEW COMPLETE GEOGRAPHY:

A Treatise on Astronomical, Mathematical, Physical, Political, and Commercial Geography. The subject is presented in a bright and attractive manner. The Illustrations are all from photographs, and teach, objectively, important facts of Physical, Industrial, and Commercial Geography. The maps are new.

PHYSICAL GEOGRAPHY—REVISED:

In which the Natural Features of the Earth, its Oceanic and Atmospheric Phenomena, and its Animal and Vegetable Life, are fully treated. The fresh, attractive style of the work and the interest of its detail charm the pupil and the general reader. Illustrated with numerous beautiful Maps and Engravings.

UNIVERSITY SERIES OF MAP-STUDIES:

Set I. Gives outline of country, together with squares, for: 1. North America, 2. South America, 3. Europe, 4. Asia, 5. Africa, 6. Oceania, 7. United States. Set II. Blanks giving squares only, for same maps as set I. Set III. Blanks with only points in margin: 1. For either North America, South America, or Africa; 2. For Europe, Asia, Oceania; 3. For United States. Commercial Set. This set consists of ten maps, as follows: Six continents showing political divisions. 1. North America, 2. South America, 3. Europe, 4. Asia, 5. Africa, 6. Oceania. Also, on a larger scale: 7. British Isles, 8. Central Europe, 9. United States showing State boundaries. 10. Mercator's Projection of the World. These blanks are intended to be used in locating canals, navigable rivers, railroads and commercial cities; for making trade and production maps of the various continents and countries; and indicate by shading or coloring the sections devoted to the production of any given article, animal, mineral, vegetable, or manufacture.

*** 2925

PREFACE.

In preparing this book we have carefully considered and have incorporated into it every feature which a consensus of opinion among educators has come to recognize as of real educational value. The whole geographical field was open to us, and we were free to choose whatever was regarded by the majority as best. We therefore offer this book as an embodiment of what conservative teachers regard as a safe mean between the widely divergent theories on which recent geographies have been based.

Physiography.—We have presented in an introductory chapter, and in the general chapter on physical geography, the leading facts with reference to land formation and land sculpture. We have presented these facts in detail in the discussion of the physical features of each continent, where they properly belong and can best be studied; we have again presented them in detail in the political sub-divisions of the continents, where their effects upon climate, industries, and people are pointed out. But we have not thought it wise to present an extended treatise on physiography, covering the first half of the book, to be studied long before the countries necessarily referred to have been given a definite location in the student's mind. We think it better to take up these features in detail under the continents and countries where they first become prominent.

We have decided to teach these features objectively on a plan that has been highly commended. For instance, instead of devoting two or three pages of text to the origin of mountains, a subject in which the average child takes no interest, we give in the general presentation of the physical geography of the earth four pictures of mountains, and under each picture give a brief description of the origin and character of the formation. The same course has been followed with reference to other physical features. The pupil will read these descriptions because of his interest in the picture, and will remember them for life because of their association with it.

Commercial and Industrial Geography.—A leading feature of this book is the treatment of industrial and commercial geography. In actual life, it is a knowledge of the countries of the earth, and of the people who inhabit them, of their resources and industries, their cities and commercial relations, that one needs for practical business purposes, or even for an intelligent appreciation of the contents of the daily newspapers.

Industrial Illustrations.—In carrying out this plan we have been engaged for three years past in collecting from all parts of the world industrial pictures—photographs showing machinery in actual operation, and under these we have placed captions which give in a few words a clear idea of the process of manufacture. We have distributed these throughout the book in such a way as to identify each industry with some state or country where it is especially prominent. We believe that this plan will awaken present interest and prove of permanent value.

Commercial Illustrations.—We also present a number of pictures made from photographs which relate to the commerce of the world, and under each have placed captions which fully explain them and which will enable the pupil to make valuable comparisons and to learn how the products of the world are handled. Turn to the picture of New York, page 46, of New Orleans, page 58, of San Francisco, page 78, of Antofagasta, page 107, of Liverpool, page 118, of Port Elizabeth, page 159, and many others of the same character which most strikingly illustrate this point.

Other Illustrations.—In addition to physical, industrial, and commercial illustrations, many others will be found, especially in the treatment of foreign countries, which give characteristic scenes in the life of the people; such as are found in Mexico, page 95, in Chile, page 107, Switzerland, page 133, in India, pages 144–5, etc.

Production Maps.—We decided not to insert production maps, because many of the best teachers now regard them as undesirable. The method now preferred is to require the pupil to make his own production maps, using blanks, which he may draw, trace or buy, for that purpose. For instance, to show the corn production of the United States, the pupil may write on a blank map the name "corn" where it is produced, or may indicate it by color, shading, or other methods. Maps which he makes in this way are invaluable, and fix the facts permanently in his mind. To teachers using this method, production maps in the book are a disadvantage, because they furnish the pupil a key, and prevent that thought and investigation which is necessary to construct the map, thereby fixing the facts permanently in his memory.

In the treatment of the United States each group of States is treated as a whole, and those features, physical and industrial, that are common to all, are presented in a general way. But each state, however small, has its own characteristics, its own group of cities, and certain industries that are peculiarly its own. These, we hold, should be known to all the people of the United States. Therefore, after the general description of each section, we have given a detailed description of each state. We think this much better than to select some one city or state as a type and devote pages to it while dismissing others with a line—a method which gives pupils a distorted idea of the states' and cities' relative importance.

Maps.—The maps are recent, and the double-page map, pages 86–87, showing the principal routes of transportation and travel will, we believe, prove of especial value.

Map Questions.—The map questions are comprehensive and complete. The questions upon the physical maps bring out the physical features; those upon the political maps fix in the pupil's mind the essential political features. A few years ago there was a certain prejudice against map questions; but this has passed away. To-day they are regarded by a majority of teachers as invaluable—they compel the pupil to refer again and again to the map, and this constant reference fixes its features on the memory. In after life the man may forget the map questions and the answers, but he still retains a clear mental picture of the map itself.

Accuracy.—In order to secure absolute accuracy in our description of the states, we sent last year to the Governor, or, in three instances, to another state officer, our description of his state, asking whether or not it was accurate and up to date. We received replies in many instances from the Governor himself, and in other instances from an officer in whose hands he had placed the matter. These replies either approved the

text or offered suggestions which we gratefully accepted. For foreign countries we obtained by direct correspondence with our consuls, from their official reports, the industrial and commercial details which go into the text. The statistics are taken from the latest department reports from Washington and from the latest foreign authorities.

Illustrations.—The illustrations are all from photographs, and a large part of these we have collected during the past two years in all parts of the world. We are indebted for several of our pictures to Messrs. Underwood and Underwood, whose copyrighted stereographic photographs we cordially recommend for purposes of geographical illustrations. We are also indebted for a few illustrations to Mr. H. C. White and to the Detroit Photographic Company, who own the copyrights.

To teachers and superintendents, both North and South, we are indebted for valuable assistance and suggestions, which came from their actual experience in the practical work of teaching geography to boys and girls.

We offer this as a new book, arranged on the plan as already outlined to meet the consensus of opinion of earnest, thoughtful educators who are teaching the subject of geography, or superintending educational systems. Wherever the text of MAURY'S MANUAL has been complete and sufficient it has been retained. We were glad to be able to do this because it is s clear, simple, and attractive that it has won for the book the uniform fav of the teachers using it. The original text makes up so large a part of th book that it is still essentially Maury's work. Maury's Geographies nev belonged to the old school, but rather to the new. Being devoted to th study of physical geography, and father of the science of the "Physic Geography of the Sea," he undertook the preparation of his book originall with the intention and purpose, "to redeem the most delightful of subjec from the bondage of dry statistics on one hand, and on the other, from th drudgery of vague, general ideas." In his original preface he adds: "I the preparation of this volume and that of its predecessors, no pains hav been spared to lead the young geographer by easy and gentle gradatio to vantage-ground from which he may overlook and survey nature f himself. 'The study of physical geography,' to borrow the words Humboldt, 'finds its noblest and richest reward in a knowledge of th chain of connection by which all natural forces are linked together an made mutually dependent upon each other; and it is the perception these relations that exalts our view and ennobles our enjoyment.'" will therefore be seen that the development of modern methods of teachin this subject have only brought it nearer to Maury's ideal.

CONTENTS.

GEOGRAPHY

INTRODUCTION.

1. The Earth is one of the Heavenly Bodies.—As we look into the sky on a clear night and behold the multitude of stars glittering in the far-away depth of space, it is hard to find any resemblance between them and the dark, solid earth on which we stand. It is hard to believe that the earth is a huge sphere rushing along in its curved path about the sun at a rate of speed swifter than that of a cannon ball, and at the same time rotating on its axis, apparently turning everything upside down every twenty-four hours.

And yet if we could stand upon the moon and view the earth, it would appear much as the moon now appears to us, only about four times as large; and if we could see it from a much greater distance, its appearance would be precisely like that of some of the stars.

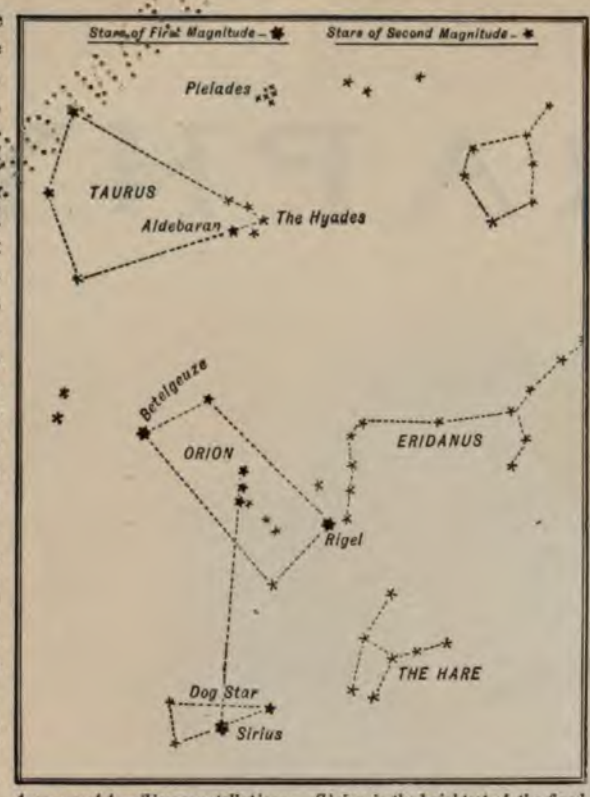
2. The Fixed Stars.—If we should watch the stars carefully from night to night, we would observe what men observed thousands of years ago—that some of them always keep in the same positions, while others are constantly moving onward along certain paths. The stars of the first kind are called **fixed stars;** to those of the second kind the name **planets,** or **wanderers,** has been given.

The fixed stars are fiery suns like our own, but they are so far away that we can see only the light that comes from them. They are more than can be numbered, for though we can see only a few thousand with the eye alone, with the aid of a powerful telescope millions more are brought into view, which are at such enormous distances from the earth that not the faintest ray of their light is visible.

These stars appear to be arranged in groups, or **constellations,** which the ancient astronomers explained by saying that the gods had placed in the sky certain persons and animals as a reward for some merit that they possessed. Thus the **"Great Bear,"** or "Dipper," was Callisto, a beautiful princess of Arcadia, whom the jealous Juno turned into a bear, and who was placed in the sky by Jupiter. The **"Little Bear,"** which contains the Pole Star, was her son,

This lesson and those that follow, as far as page 24, should be read and discussed with books open by class and teacher. Frequent reference should be made to these lessons during the progress of the class through the book, and after it has been completed they may be assigned as regular lessons for recitation.

Arcas. Near the two bears are **Cassiopeia, Cepheus,** and the **Dragon,** about each of whom a story is told by the Greek writers. There is a great belt in the sky composed of twelve constellations entirely surrounding the earth. This belt is called the **zodiac.** Within it is the path along which the sun appears to travel in his yearly course. You may find the names of these constellations in an almanac, where they are called the **twelve signs of the zodiac.**



A group of familiar constellations. Sirius is the brightest of the fixed stars. Notice that the three stars forming the belt of Orion point to it. The Hyades form a V and the Pleiades are in a cluster just above it.

3. Planets and Moons.—The planets are our nearest neighbors among the heavenly bodies, and are the only ones, except our sun and moon, about which anything of importance is known. They shine with a steady light and revolve about the sun like our earth, but at different distances. The time required by a planet to make one revolution about the sun is called its **year.** The planets near the sun have shorter years than those farther away, because they move more swiftly and have less distance to go.

Nearest the sun is **Mercury,** named for the messenger of the gods because of his swiftness. Next is **Venus,** the brightest of the planets, named after the goddess of beauty. Beyond the earth is **Mars,** which received the name of the war-god on account of its red color. Next is **Jupiter,** the largest planet, and hence named after the king of the gods. Most distant from the sun are **Saturn, Uranus,** and **Neptune.** Between Mars and Jupiter are several hundred smaller planets called **planetoids.** These cannot be seen without a telescope.

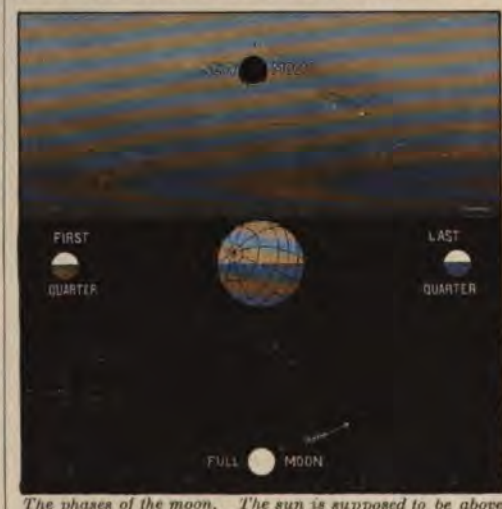
All the planets, except Mercury and Venus, have bodies revolving about them which we call **satellites,** or **moons;** these help to light up the planets at night. The earth has but one moon, but Mars has two, Jupiter five, and Saturn eight. It is probable that many moons are yet undiscovered.

Phases of the Moon.—Notice the position of the **new moon** soon after sunset. Observe it for several nights at the same hour, and you will see that each night it is farther east and shows more and more of its illuminated side. At the end of two weeks it has moved entirely across the sky and appears in the east at sunset as the **full moon.** For the next two weeks it is seen later and later each night—showing less and less of its illuminated side—a half moon at the end of the third week as at the end of the first week. At the end of four weeks you may see it again in the west a thin crescent; it has revolved entirely about the earth. The time of its revolution is called a **month.** These changes in the appearance of the moon are called **phases.** By means of a telescope we may watch the revolution of other moons about their planets. The moons of Jupiter are the most easily seen. Just as we may observe the moons revolving about their planets, so we may observe the planets revolving about the sun, only our observation must be far more careful and exact.

4. Comets and Meteors.—Besides the planets, moon, and fixed stars, there are strange fiery bodies that appear suddenly in the sky and vanish as quickly as they came. In the year 1882 a bright star appeared in the northeastern sky. As it moved along toward the sun, a fan-shaped light spread out behind it known as the **tail.** It circled about the sun and then sped away into the depths of space. Such bodies are called **comets.** As in the case of the fixed stars many comets have been seen with the telescope that are invisible to the naked eye.

Sometimes red-hot masses of iron or stone fall upon the earth. These are called **meteorites.** About 275 of them have fallen since the year 1800. We do not know where they come from, but some think that they are little planets which the earth meets in its journey around the sun. At certain seasons of the year flashes of light are seen in the sky. These are called **shooting stars.** They are doubtless meteorites that pass through the atmosphere of the earth, but do not reach its surface.

5. The Solar System.—The sun and the planets with their moons are together called the "Solar System." The **sun** is the center about which all other members of the system revolve. It is a red-hot mass of matter surrounded with burning vapor. The diameter of the sun is over 100 times that of the earth. This means that it would take 1,300,000 bodies the size of the earth to make up the sun. If the earth were as large as the sun, its surface would extend nearly 200,000 miles beyond the moon. An ocean steamer can sail around the earth in about fifty days; but if the earth were as large as the sun, the voyage would take fifteen years.



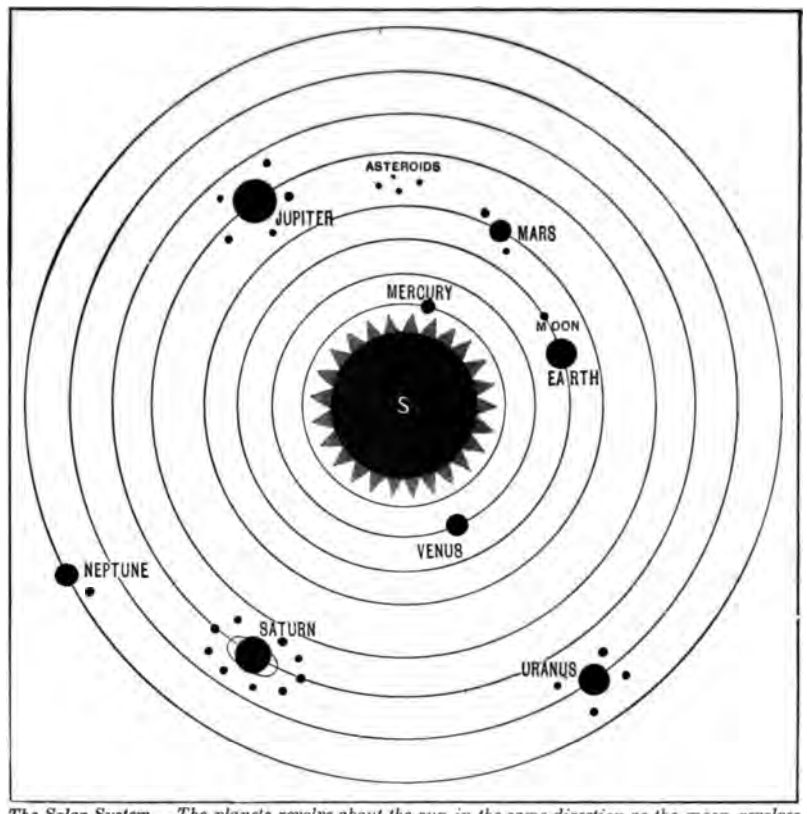
The phases of the moon. The sun is supposed to be above the picture in line with the earth and moon. The moon revolves about the earth in the direction shown by the arrow. Notice that when the moon is on the side of the earth opposite to the sun, we see the half of its surface that is lighted up; but when it is between the earth and the sun, only a small crescent-shaped part of the illuminated side can be seen; between these two positions half of its illuminated side, or a quarter of its entire surface, is visible.

From the sun all the planets and moons receive light and heat. Without this light and heat all the water on the earth would become ice. The earth would be wrapped in perpetual midnight, and every living thing, both plant and animal, would perish.

Origin of the Solar System.—It is thought by some astronomers that the sun, the planets, and moons all once formed a single mass of glowing **vapor,** which filled all the space between the sun and the most distant planet. This mass rotated on its axis just as the earth does now. As the mass cooled, the motion of rotation caused it to bulge out at the equator, and a number of rings of vaporous matter were thrown off, which afterward took on a spherical form and continued to revolve about the central mass as planets. The planets also threw off rings of matter which became moons. The planet, Saturn, still has two **rings** revolving about it, which may be seen with the telescope. A noted astronomer

has said: "The rings were left about Saturn to show us how the world was made.

The Surface of the Earth.—When the earth was first formed into a sphere it was intensely hot, and the waters which now form oceans and rivers floated above it in the form of vapor. But as the surface cooled, the vapor condensed into water and fell to the earth, only to be driven back again by the still heated rocks. At last the waters remained permanently upon the earth, covering the entire surface. When rocks cool from a melted condition they become much smaller. Accordingly, as the interior of the earth continued to cool it became smaller than the outer crust. This caused the crust to rise up in **folds** or **wrinkles** in the same way that a loose garment or a carpet too large for a floor will form in wrinkles or folds. The elevations thus formed were the beginning of the continents and the waters of the earth, gathering in the depressions, formed the oceans.



The Solar System. The planets revolve about the sun in the same direction as the moon revolves about the earth, and all of their orbits or paths are nearly in the same plane. In this diagram the size of the planets is too great in proportion to that of the sun and the size of the moons too great in proportion to that of the planets about which they revolve. The relative distances of the planets from the sun are also only approximately shown.

As soon as the land rose the waters began to take part in shaping its surface. The clouds laden with vapor were driven against the mountains, and condensed into rain; the rains began to form springs, and brooks, and rivers, which wore away the rocks and washed the loose material down to the lower levels where it was spread out as soil. In this way the plains and valleys were made. The waters of the sea, dashing against the shores, helped to grind up the rocks, and the frost and the atmosphere also took part in the forming of land.

Soon **plants** began to grow in the new soil. Their leaves and stalks decaying made the soil richer and deeper. After that **animals** appeared. First the simplest forms, such as shell-fish, corals, and sponges; then fishes and reptiles, and at last man.

A baked apple after cooling. The shrinking of the apple causes the skin to wrinkle. The height of the wrinkles and the depth of the furrows between them have about the same proportion to the size of the apple as mountains and valleys have to the size of the earth. The cause in each case is the same; that is, cooling from a heated state.

The surface of the earth is undergoing constant change. The streams carve out valleys among the hills and mountains, and the worn-out earth material is carried away to build up plains along their lower courses, and to fill up the shallow parts of the ocean. Along the coast, capes, headlands, isthmuses, and islands are formed by the combined action of the rivers, waves, and the rising and sinking of the coast and ocean beds. In these various ways the forces of nature have gradually shaped the forms of land and water which we call **natural divisions.**

6. Divisions of Geography.—The study of the heavenly bodies is called "astronomy." So that part of geography that treats of the earth as one of the heavenly bodies is called "astronomical geography." Because this division treats of the shape and size of the earth and of measurements upon its surface, it is also called **Mathematical Geography.**

A second division is **Physical Geography.** This treats of the natural divisions of the earth, such as oceans, continents, islands, mountains, plains, and valleys, of the heat and moisture of the atmosphere, and of plants and animals. These two divisions of geography treat of the earth in its natural condition.

But the earth is the home of man, and man has divided it into countries, provinces, and cities. These are inhabited by different races and nations, each of which has its own customs, religion, and form of government. The branch of geography that treats of these things is called **Political Geography.**

One of the most important things that we learn in geography is how the earth is made to provide for the needs of mankind. Men engage in various occupations by which they produce the things that satisfy such needs. But since the same articles cannot be produced in all countries, the nations of the earth engage in trade to secure the things that they cannot obtain at home. That part of our subject that treats of the production of articles and the trade in them among the nations of the world is called **Commercial Geography.**

I. GENERAL DEFINITIONS.

1. Geography is a description of the surface of the earth, and its inhabitants. It is divided into Mathematical, Physical, Political, and Commercial Geography.

2. Mathematical Geography treats of the shape, size, and motions of the earth, the determination of positions and distances on its surface, and of its representation by globes and maps.

3. Physical Geography treats of the natural divisions of the surface of the earth, of climate, and the distribution of plants and animals.

4. Political Geography treats of the inhabitants of the earth, their customs and religions, their industrial pursuits, and their forms of government.

5. Commercial Geography treats of the commodities that are bought and sold by the nations of the earth, their production, transportation, and the trade in them.

Review Topics.—Fixed stars. Planets. Constellations. The zodiac. Moons. Comets. Meteors. Meteorites. The solar system. Origin of. The surface of the earth. How natural divisions were formed. Effects of moving water. Plants. Animals. Geography. Its divisions. Mathematical Geography. Physical Geography. Political Geography. Commercial Geography.

MATHEMATICAL GEOGRAPHY.

II. SHAPE AND SIZE OF THE EARTH.

1. The Shape of the earth is nearly that of a sphere or round ball. It does not appear round to us, because we see so small a part of it at a time.

Early Theories.—In ancient times it was the general opinion that the earth was flat and circular, because it *appeared* so when seen from an elevation. Ancient nations thought, and savage tribes still think, that the country of each occupies the center of the earth, because from any high point of observation the horizon is equally distant on every side.

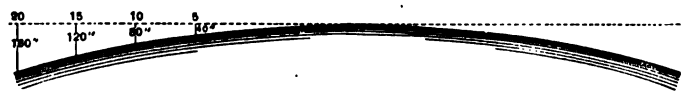
The philosophers of ancient Greece were among the first to make observations that led them to think that the earth was round. In the middle of the fourth century B. C., **Aristotle** said that travelers had noticed that when they went north or south a few hundred miles, new stars came into view before them on the horizon, while those behind them sank out of sight. This seemed to prove that they were traveling over a curved surface. Aristotle noticed also that when the earth comes between the sun and the moon, it casts a **circular shadow** upon the moon. This, he said, proved that the earth is a sphere, since only a sphere will cast a circular shadow in all positions.

The earth's shad w upon the moon. When the earth comes between the sun and the moon, it casts a shadow upon the moon's surface, causing an eclipse. The outline of this shadow is always curved, showing that the complete shadow would be circular. What does this prove about the shape of the earth?

Early Navigators thought the earth must be round, because whenever they came in sight of land, they first saw the tops of trees or the summits of the mountains, while the land beneath lay concealed from view. They also observed in watching a ship departing from shore that it gradually sinks below the horizon until the tips of the masts finally disappear.

Proofs.—In 1519, **Magellan,** a bold sailor of Portugal, proved these conjectures correct by actually sailing round the world.

If a level line be drawn along a flat coast or out to sea, *in any direction*, the surface of the earth is found to curve away from it about eight inches to the mile. This proves conclusively that the earth is a sphere.



A straight line touching the surface of the water. Notice that the surface curves away from this line forty inches at a distance of five miles, eighty inches at a distance of ten miles, etc. How far distant could you see a ship whose masts are fifty feet high?

But, though the form of the earth is thus known to be spherical, its exact shape and size has to be determined by laborious calculation.

Actual Measurement.—From measurements made in various parts of the world, it has been ascertained that the exact figure of the earth is that of an **oblate spheroid.**

A Spheroid is a body *like* a sphere or globe. An oblate spheroid is a globe flattened at the poles, somewhat as an orange is at the stem, especially if it be slightly compressed between the finger and thumb.

The cause of the flattening at the poles and the bulging out at the equator is the motion of rotation. If any plastic body as a ball of putty or a soft rubber ball be rotated rapidly on its axis, it will flatten at the poles. This is due to the same force that causes a stone to fly from a sling when whirled about the hand. It is sometimes called **centrifugal force,** or **inertia.**

Since the earth is a sphere, or nearly so, some of us may wonder why it is that objects do not fall off the earth when it rotates. The reason for this is that the earth has a power of attraction, called **gravitation,** by which it draws all objects toward its center. People and things on the opposite side of the earth are not really "upside down," because *down* is toward the earth's center and *up* is toward the sky. Hence everything on the earth is naturally "right side up."

2. Size of the Earth.—The **Circumference** of the earth, or greatest distance round it, is nearly 25,000 miles.

The **Diameter** of the earth, or distance through its center in a straight line, from any point on the surface to the point opposite, is nearly 8,000 miles. The polar diameter is 26½ miles less than the equatorial diameter.

The **surface** of the earth contains about 197,000,000 square miles.

Review Topics.—Shape of the earth. Why does it seem flat? Give early theories about its shape. Proofs. What is the exact figure of the earth? Describe an oblate spheroid. Account for the flattening at the poles. What is gravitation? Explain the terms "up" and "down." What is the circumference of the earth? Its diameter? What is the difference between the polar and equatorial diameters. Area of its surface?

III. MOTIONS OF THE EARTH.

1. Daily Motion.—The sun is seen in the east every morning, and seems to cross the heavens and disappear in the west at sunset. The stars, in the same way, appear to rise in the east and sink in the west. This is not because the sun and stars go round the earth. They do not; they appear to do so because of the daily rotation of the earth on its axis.

Illustrations.—If an observer could watch our globe from the moon, and his eye first discern North and South America, these continents would in a few hours move out of sight; the Pacific Ocean would come into view instead; then the islands of Oceania, followed by Australia, Asia, Europe and Africa, the Atlantic Ocean, and, finally, America again.

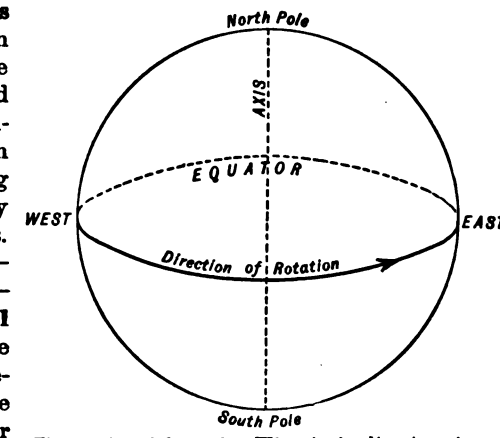
When we travel in the cars, the houses and trees that we see, seem to be moving past us, though we are really moving past them. They have an **apparent motion** opposite to the real motion of our train. So the sun and stars seem to be moving from east to west, though in reality we are moving with the earth from west to east.

Direction.—The earth is constantly turning round (rotating) in the same direction. This direction is called **east.** The diameter in which it rotates is called the **axis.**

The word "east" means *dawn*, and it was applied to the direction in which the earth rotates, because the first rays of the sun are seen in that direction. The direction opposite to east is called **west.**

North and South.—The earth's axis is perpendicular to a line running east and west. The directions in which it points are called north and south. Just above the North Pole is a bright star called the **Pole Star,** or **Polaris;** and we may easily find the direction at night by facing this star. The east will then be on our right, the west on our left, and south behind us. Sailors find their direction at sea by observing the North Star or by the use of the compass.

The Four Points—N., E., S., and W.—are called the **cardinal points,** that is, the *principal* points. Besides these there are other intermediate, or **semi-cardinal**



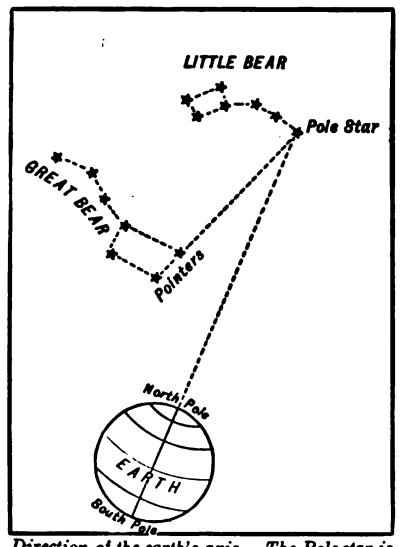
The rotation of the earth. What is the direction of rotation called? How are other directions derived from this?

points, such as northeast, northwest, southeast, and southwest.

Time.—The time required for a complete rotation of the earth is called a **day.**

The day is divided for convenience into twenty-four **hours,** the hours into **minutes,** etc.

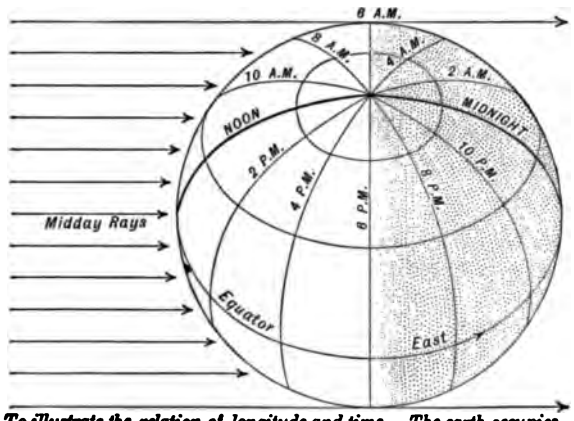
The Clock is an instrument for measuring the time of the earth's rotation. The dial is divided into twelve equal parts, and the hands move twice around the dial for every complete rotation of the earth.



Direction of the earth's axis. The Pole star is the only one which does not change its position. The other fixed stars revolve about it once each day. The direction of the earth's axis is also fixed, since it always points toward this star.

Rate.—The circumference of the earth at the equator is 25,000 miles. A man, therefore, near the equator moves toward the east at the rate of about one thousand miles an hour, or seventeen miles a minute.

Effects.—The rotation of the earth causes **day** and **night.** The word day, as here used, means daylight. The earth is all the time turning one-half of its surface toward the sun, and one-half away from it. The side which at any given time is turned toward the sun has day, the other has night.



To illustrate the relation of longitude and time. The earth occupies this position at the time of the equinoxes. The sun rises and sets at 6 o'clock. The meridians are drawn 30 degrees apart. How many are there? As we go east from the meridian, where the midday rays of the sun strike, it becomes two hours later at each successive meridian; going west from the same meridian, it is two hours earlier at each interval of 30 degrees. How many degrees of longitude are equal to one hour of time? How far in degrees is it from midday to sunrise? From midday to midnight.

Difference of Time.—It is this rotation of the earth which causes places to the east of us to have sunrise and midday earlier than we, and places to the west, later.

Illustration.—This may be made clear by placing a lamp or candle near the school globe. Mark on the globe the location of Liverpool, New York, San Francisco, and Honolulu. Now rotate the globe until the rays of the lamp just reach Liverpool. Remember that the direction in which we rotate the globe is called east. All places west of Liverpool are still in darkness. Continue to rotate the globe until the rays of the lamp reach New York, San Francisco, etc. Does the sun rise earlier or later at these places than at Liverpool?

2. Yearly Motion.—In addition to its daily rotation, the earth makes an annual **revolution** about the sun; this is accomplished once in every 365¼ days, or, more accurately, 365 days, 5 hours, 48 minutes, and 50 seconds. This period is called a **year.**

Earth's Orbit.—The path of the earth in its annual revolution is called its *orbit.* This orbit is an ellipse, but is so nearly a circle that it may be regarded as one. The earth is about 3,000,000 miles nearer the sun in winter than in summer, but the average distance from it is about 92,800,000 miles.

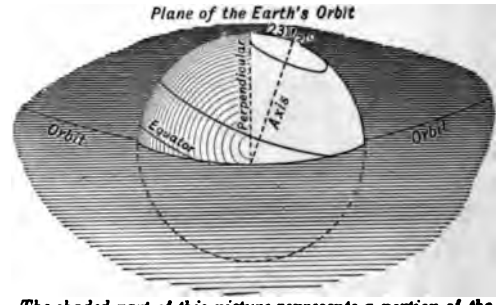
Regarding the orbit as a circle, we obtain its diameter by doubling 92,800,000. This diameter, multiplied by 3¼, gives us the distance traveled by the earth in one year. If we divide this distance by the number of minutes in a year, we shall find that, in our annual journey round the sun, we are traveling at the rate of more than a thousand miles a minute.

A Plane is a level surface like a floor.

If we imagine an immense plane passing through the center of the sun, and reaching the orbit of the earth at every point, we have an idea of what is meant by the **Plane of the Earth's Orbit.**

The axis of the earth is inclined to the plane of its orbit 23½°.

Illustration.—Suppose the page of this book to represent the Plane of the Earth's Orbit. Hold a pencil so that it is perpendicular to the page. It then makes an angle of 90° with it. Lower the top of the pencil half way to the page; it then makes an angle of 45°. Lower it one-fourth the distance to the page and it will represent very nearly the inclination of the earth's axis to the plane of its orbit.

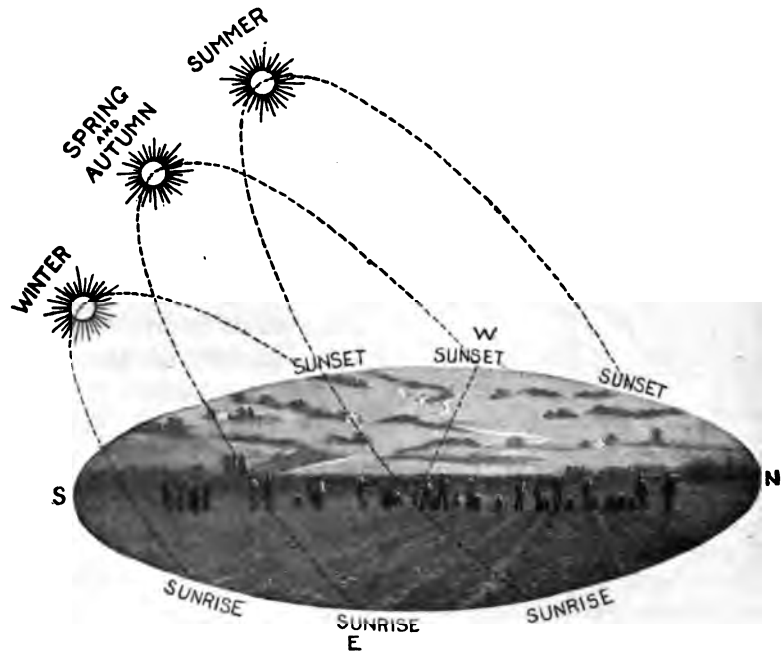


The shaded part of this picture represents a portion of the plane of the earth's orbit. The orbit is the curved path which the earth follows around the sun. Notice how much the axis of the earth is inclined toward a line that is perpendicular to the plane of the orbit.

Apparent Motion of the Sun.—The yearly revolution of the earth, combined with the inclination of its axis, has the effect of making the sun *appear* to move northward in summer and southward in winter.

The reason for this *apparent* motion will be understood by reference to diagram V, 2.

Review Topics.—Describe apparent daily motion of sun and stars. What really moves? Give illustration. What is the direction of the earth's daily motion? Time required for complete rotation? Define the axis and poles of the earth. What is the rate of the earth's rotation? What causes day and night? Why do places differ in time? Illustrate. What other motion has the earth? What is a year? Define the earth's orbit. How far are we from the sun? How fast do we travel round the sun? What is a plane? How much is the axis of the earth inclined? Describe the apparent yearly motion of the sun.

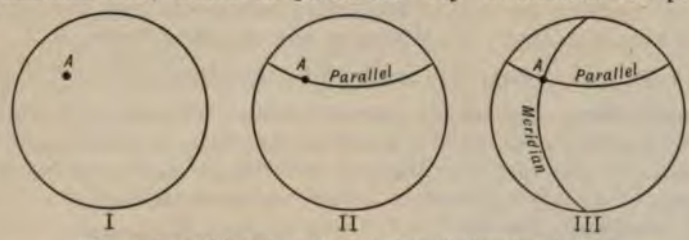


This picture shows the height of the sun above the horizon at the time of the solstices and the equinoxes. The dotted lines show the path of the sun through the sky and measure the length of the day at each of these periods. Notice that the sun rises in the true east and sets in the true west at the time of the equinox. At the winter solstice it rises and sets south of the east and west points; at the summer solstice it rises and sets north of them.

IV. LATITUDE AND LONGITUDE.

1. The Position of places on the earth is described by means of circles supposed to be drawn upon its surface.

Every place is supposed to have two such circles, one running north and south, called the **meridian** of the place, the other running east and west, called its **parallel.** Try to describe the position



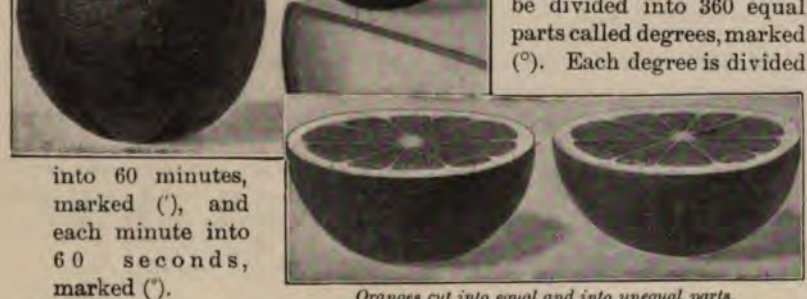
The use of parallels and meridians in fixing the location of places.

of the dot A on the surface of globe I; it cannot be done because there is no place to measure from. On globe II we may say the dot A is on a certain parallel. But this parallel runs all the way around the earth. Let us draw also the meridian of A; we may see *now* that the dot is at the intersection of the two circles.

2. A Great Circle is any circle that divides the globe into two equal parts or hemispheres.

3. A Small Circle is any circle that divides the earth into two unequal parts.

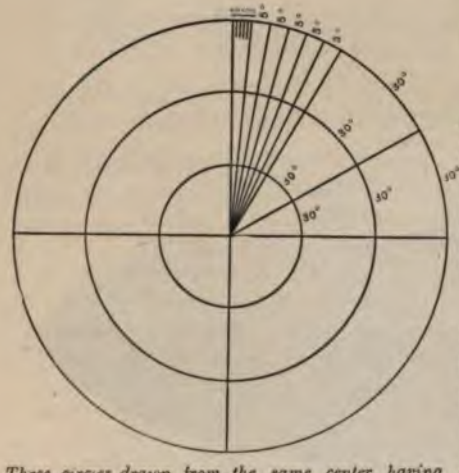
Suppose two oranges be cut as shown in the picture; which is divided equally? which unequally? Examine the edges of the pieces; which are great circles? Small circles?



Oranges cut into equal and into unequal parts.

Every circle is supposed to be divided into 360 equal parts called degrees, marked (°). Each degree is divided into 60 minutes, marked (′), and each minute into 60 seconds, marked (″).

Since all circles contain the same number of degrees, it is evident that the length of a degree will depend on the size of the circle of which it is the $\frac{1}{360}$ part. This will be made clear by a study of the accompanying diagram.



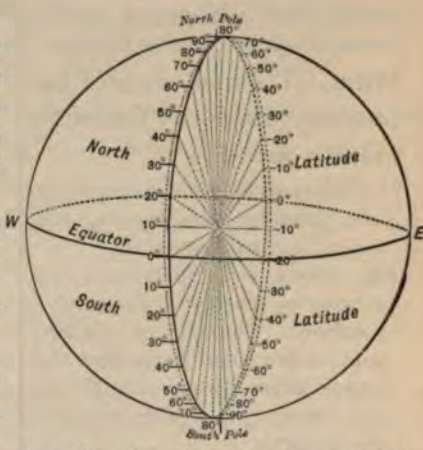
Three circles drawn from the same center having parts of their circumferences divided into degrees. One fourth of a circle contains ninety degrees and is called a quadrant. Any portion of a circumference is called an arc. Compare the lengths of arcs of thirty degrees in the three circles. Which circle has the longer arc? Which the shorter? Notice that each arc on the circumference corresponds to an angle at the center having the same number of degrees.

4. The Equator is a great circle passing round the earth midway between the poles. It divides *equally* the surface of the earth. Hence its name.

5. Latitude.— Distance north or south of the Equator is called Latitude. It is expressed in degrees (°), minutes (′), and seconds (″).

Places *on* the equator have no latitude. No place can have more than 90° of latitude, for no place can be farther from the Equator than the Pole is. Places north of the Equator are in **north latitude,** those south of it, in **south latitude.** The degrees of latitude are numbered on the sides of maps.

Those regions of the earth lying near the Equator are sometimes called **low latitudes. High latitudes** are those near the poles.



A meridian circle divided into degrees. Which part of this circle is used to measure north latitude? Which south latitude? What is half of a meridian circle called?

6. Parallels of latitude are small circles that pass round the earth parallel to the Equator.

The lines that are drawn from east to west across maps are parallels of latitude. East and west distances are measured along these lines.

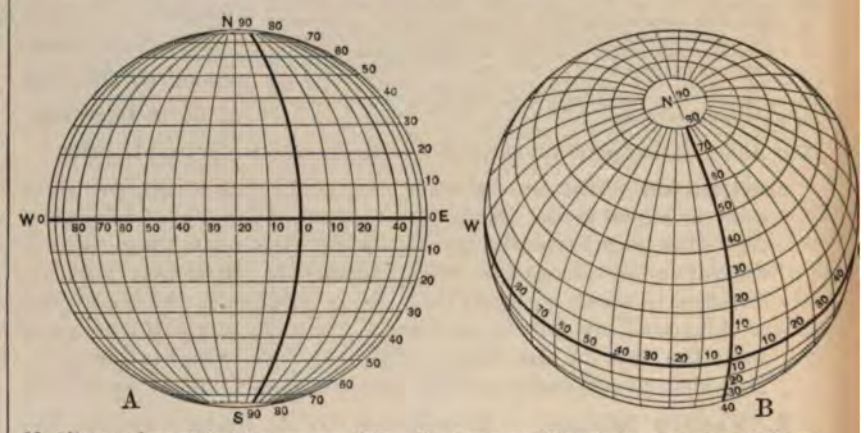
7. The Tropics are small circles parallel to the Equator, and 23½ degrees from it. The northern circle is the **Tropic of Cancer;** the southern, the **Tropic of Capricorn.**

Tropic is derived from a Greek word meaning *to turn.* The Tropics mark the farthest points north and south of the Equator that have the sun directly overhead. They are so named because the sun in his annual course appears to turn on reaching a point directly above these circles and to move in the opposite direction (see V, 4).

8. The Polar Circles are small circles 23½ degrees from the poles. The one drawn about the North Pole is the **Arctic Circle;** the one about the South Pole is the **Antarctic Circle.**

The length of the days and of the nights within these circles varies from 24 hours to six months in length. On the circles themselves the extreme length is 24 hours. This increases to six months at the poles. This will be seen from a study of diagram in V, 2.

9. Meridian Circles are great circles that pass through the poles. They are used on maps and globes to mark off into



Meridians and parallels drawn upon a globe. The heavy meridian in A passes through Greenwich. Degrees of latitude are marked along the 70th meridian; degrees of longitude are marked below the equator. In B the globe is turned so that parallels may be seen running entirely around the globe. Notice that they become smaller and smaller as they approach the pole, where the length of a degree of longitude (that is, 1-360 of a parallel) becomes zero.

equal portions the entire distance east and west round the earth on any parallel.

10. A Meridian is half a meridian circle. It extends from pole to pole.

Meridian means midday. As the sun reaches each meridian, it is noon at all places through which that meridian passes from pole to pole.

There is no limit to the number of parallels, meridians, and meridian circles that may be drawn upon the globe. In fact, every place on the earth has its own meridian and parallel which may be found by careful computation.

11. Longitude.—Distance east or west of a given meridian is called Longitude. It is expressed in degrees (°), minutes (′), and seconds (″). Longitude is reckoned from the **Prime,** or **First Meridian.**

A Prime Meridian is any meridian from which a nation may choose to reckon longitude. The International Meridian Conference, which met in 1884 at Washington, recommended that the **Meridian at Greenwich,** England, be adopted as the Prime Meridian for all nations.

If a place is east of the prime meridian, it is in **East Longitude;** if on the west, it is in **West Longitude.** The degrees of longitude are numbered on the top and bottom of maps. Places *on* a prime meridian have no longitude, and no place can have more than 180° of longitude.

The equator divided into degrees of longitude.

The equator divided into degrees of latitude. Longitude is measured east or west from the meridian of Greenwich. Noticethateast longitude and west longitude meet at 180°, which is the greatest distance from the prime meridian that any place can have.

Length of Degrees.—As all the meridians meet at the poles, and diverge or spread out thence till they reach the equator, the distance between any two varies with the latitude. Therefore a degree of longitude is greater at the equator than it is either north or south of it.

A degree of longitude at the equator is nearly 69.2 miles; degrees diminish in length until the pole is reached, where there is no such thing as longitude.

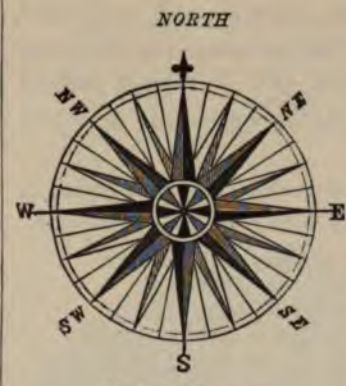
Length of a Degree of Longitude measured on every 10th Parallel of Latitude.

Lat.	Miles.	Lat.	Miles.	Lat.	Miles.
0°	69.19	30°	59.0	60°	34.5
10°	67.9	40°	52.3	70°	23.6
20°	65.0	50°	44.4	80°	11.9

If the earth were a perfect sphere, a degree of latitude would be everywhere of just the same length; but owing to the flattening of the earth, it is $\frac{7}{10}$ of a mile longer at the poles than at the equator; at the equator it is half a mile less than a degree of longitude, while at the poles it is $\frac{1}{3}$ of a mile more. Practically, a degree of latitude may be regarded as everywhere equal to 69$\frac{1}{8}$ miles.

12. The **convenience** of using latitude and longitude at sea may be readily shown.

Suppose a whaling ship in the Pacific Ocean wishes to sail for Honolulu in the Hawaiian Islands. By making an observation of the sun the captain finds that his latitude is 40° north, and by consulting the ship's chronometer, or clock, he finds his longitude to be 135° west. By examining his chart of the Pacific Ocean he marks his exact position, and finds that Honolulu lies to the southwest. He accordingly steers by the compass in that direction.



Mariner's Compass.

The Mariner's Compass consists of a card which represents the horizon and its points, attached to a magnetic needle. This needle is balanced on a pivot and always points toward the north.

The top of the card is marked **north,** the right hand **east,** the bottom **south,** and the left hand **west.**

The four points—N., E., S., and W.—are called the **cardinal points,** that is, the principal points. Besides these there are other intermediate points, such as **northeast, northwest, southeast,** and **southwest.**

The boundaries of states and countries are frequently parallels and meridians, as these may always be easily found.

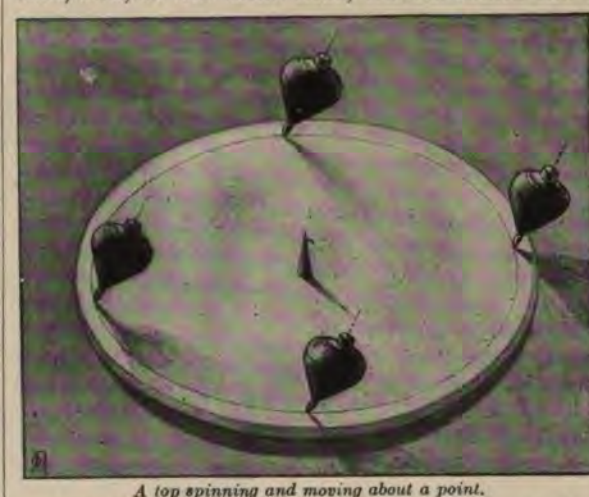
Review Topics—Position of places on the earth. Great circle. Small circle. How are circles divided? Equator. Why so called? Latitude. How much latitude can a place have? How little? Parallels. The tropics. Polar circles. Meridian circles. Meridians. Longitude. A prime meridian. How much longitude can a place have? How little? Are degrees of longitude all of the same length? Do degrees of latitude vary in length? How long are they? Explain the use of latitude and longitude. The Mariner's compass. Its use.

V. CHANGE OF SEASONS.

1. Inclination of the Earth's Axis.—The axis of the earth is inclined to the plane of its orbit, just as the axis of a top often inclines toward the floor when it *begins* to spin upon it.

The top spins round on its axis, and at the same time may travel round some point on the floor. It has thus two motions.

In like manner the earth turns round on its axis in daily rotation, and, at the same time, travels round the sun in yearly revolution.


A top spinning and moving about a point.

When a top is first thrown, it will often move around some point with its axis inclined, as shown in the picture. Imagine the top spinning in space and moving about in a circle, and you will have a correct idea of the rotation and revolution of the earth.

There is this difference between the earth and the top; the top inclines more and more as its spinning slacks, but the earth **never slacks its rate,** and the **inclination of its axis** is always the same. It inclines from the perpendicular at the constant angle of 23½°; and the north pole constantly points toward the north star.

If the earth's axis were perpendicular to the plane of its orbit, the **sun's rays** would come from the same direction throughout the year; as a result of this, the days and nights would be of equal length all the year, and there would be no change of seasons. The frigid zones would have perpetual winter, the temperate zones perpetual spring; in the torrid zone the climate would be uniformly hot throughout the year. Just as this position of the axis would result in a uniform temperature throughout the year in each latitude, so it would make the winds and rainfall uniform throughout the year.

2. Effect.—The inclination of the axis of the earth, combined with its revolution in its orbit, **causes the seasons;** for when the earth is in one part of its orbit, the north pole is turned toward the sun; and when in the opposite part, the south pole is turned toward the sun.

3. Equinoxes.—Twice every year day and night are equal in length. These times are called the Equinoxes (æquus, *equal;* nox, *night*). They mark the seasons of spring and autumn.

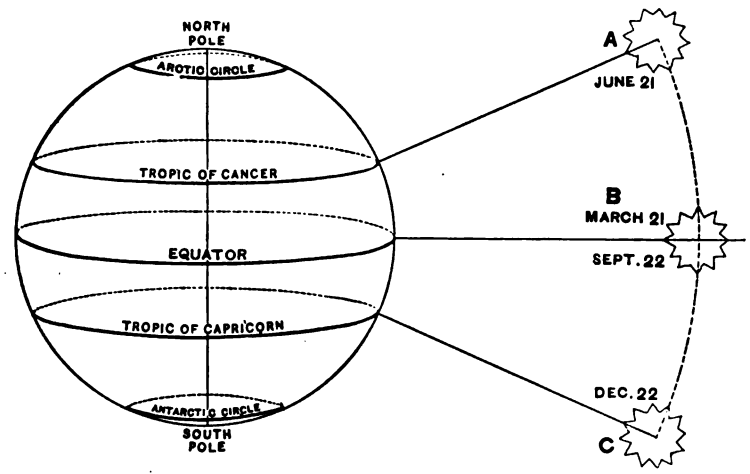


Diagram to illustrate the apparent motion of the sun north and south of the equator. (Compare with figure on page 9.) When the sun is at B its rays are perpendicular to the equator, and the days and nights are equal all over the earth. When the sun is at A its rays are perpendicular to the Tropic of Cancer, the northern hemisphere has summer, and the southern, winter. At C the rays are perpendicular to the Tropic of Capricorn, and the seasons are reversed.

In passing northward from C to A, the sun crosses, or is opposite to the Equator at B. This happens on the 21st of March every year. On that day the sun sets at the south pole and rises at the north pole. At all other places it rises and sets at six o'clock; consequently the day and night are then equal: this is the **Vernal** or **Spring Equinox.**

Six months afterward—on the 22d of September—as the sun returns from the Tropic of Cancer to the Tropic of Capricorn, he again crosses the equator.

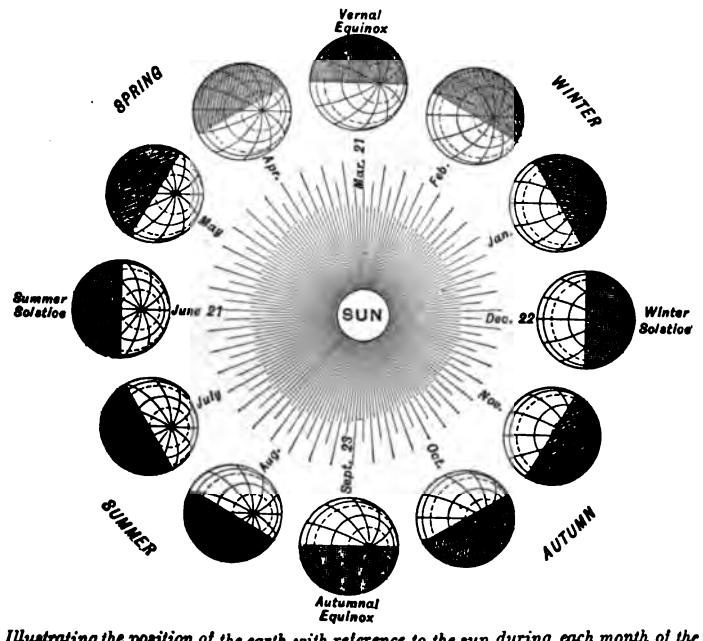
He now sets at the north pole and rises at the south. Day and night are again equal; and this time is called the **Autumnal Equinox.**

4. Solstices.—When the sun in his apparent journey reaches the most northerly point in summer, and the most southerly in winter, he appears to *stand still* for several days.

One of these "*stand-still*" places is called the **summer solstice,** the other the **winter solstice.**

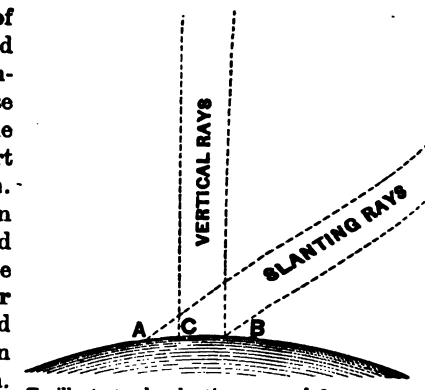
Summer Solstice.—On the 21st of June the sun reaches the summer solstice, or northern limit of his journey. He is now 23½° north of the equator, on the Tropic of Cancer. At noon, therefore, his rays are vertical (directly overhead) to all places on or near that tropic. Consequently in all places north of the equator it is the **warm season** of the year.

Winter Solstice.—On the 22d of December the sun reaches his other solstice at the Tropic of Capricorn. He is now vertical at noon to all places on or near that tropic, and the southern hemisphere has summer.



Illustrating the position of the earth with reference to the sun during each month of the year. Notice that half of the earth is always lighted up. At the equinoxes the parallels of latitude are divided equally between light and darkness, showing that the days and nights are equal. At all other times the parallels are divided unequally, showing that the days and nights are unequal in length. Take any parallel, trace it around the circle and note how the length of the day changes in each month. Notice also how the change of seasons depends upon the direction in which the sun's rays strike the earth. On June 21 the North Pole is turned toward the earth and the northern hemisphere has summer. What is true about the seasons on December 22?

But at this time the rays of the sun fall slantingly, and therefore feebly, on the northern part of the earth, because (as seen in the diagram of the Orbit of the Earth) that part now leans away from him. Therefore we in the northern hemisphere have now cold weather, and we call the December solstice the **winter solstice.** Having reached the winter solstice, the sun turns again toward the north.



To illustrate why slanting rays of the sun heat earth less than vertical rays. In the figure vertical rays fall upon a surface represented by B. The same number of rays striking the earth a slanting direction are spread over twice as m surface, namely A B. It is clear that the r when concentrated would be hotter.

5. Seasons.—Thus the year is divided into seasons, and the seasons on the two sides of the equator are opposite; that is, when it is winter wi us in the northern part of the earth, it is summer with the peop on the southern side of the equator.

Review Topics.—Illustrate the inclination of the earth's **axis.** How is t earth like a spinning top? How does it differ from the top? What is the effect the inclination of the earth's axis? How often are day and night equal eve year. What are these times called? What seasons do they mark? Expl the vernal equinox. The autumnal equinox. The solstices. When do th occur. Summer solstice. Winter solstice. What is said of the seasons?

VI. THE ZONES.

1. Zones.—The Tropics and the Polar Circles divide the earth surface into five great belts or zones which differ in temperatu They are called the **Torrid,** the **North Frigid,** the **Sou Frigid,** the **North Temperate,** and the **South Temperate Zone**

2. The Torrid Zone.—The belt between the two Tropics the Torrid Zone. It is 47° wide. It embraces two-fifths of th entire surface of the earth. This the **tropical region.**

The sun is vertical twice a year t all places within these regions, an there is no cold weather; the peop do not, as a rule, even build chimney to their houses. The year is usuall divided into two seasons, the **rain** and the **dry,** corresponding to ou summer and winter.

The sun is never vertical to any pla north of the Tropic of Cancer, nor any place south of the Tropic of Capricor

3. The Frigid Zones.—The spac that lies between the Arctic Circ and the north pole is the **Nort Frigid Zone.** The **South Frigi Zone** is between the Antarctic Circ and the south pole. Each of thes zones is circular in shape, having radius of 23½°. The summers ar short, and the winters long an severe. As we approach the poles, the days in summer becom longer and longer, till at the poles there is but one day and on night during the whole year, each being six months long.

To an observer at the pole the sun has no rising and setting as we understand these terms. About March 21 its first rays appear. Following the horizon it makes a complete circuit of the sky every twenty-four hours, rising spirally for three months until it reaches a height of 23½°. This is at the time of the summer solstice. It then descends as it rose, disappearing below the horizon September 21, and the long polar winter begins. As the sun sinks only 23½° below the horizon, it does not become entirely dark in the Frigid Zones, but twilight prevails through the long winter.

At the time of the Vernal Equinox, when the season for its return draws near, the inhabitants of these icy lands anxiously look for it, and climb the mountains to catch a glimpse of its earliest beams. From this time (March 21) until September 22, when the sun again reaches the equator, there is uninterrupted daylight at the pole.

Map of the hemispheres, showing the zones and their boundaries. *The light shading indicates the highland regions of the earth.*

These circumstances of day and night occur in reversed order in the South Frigid Zone.

The larger part of the area of these zones has never been visited by man, and we do not know whether it consists mostly of land or of water.

4. The Temperate Zones.—The region between the Tropic of Cancer and the Arctic Circle is the **North Temperate Zone.** That between the Tropic of Capricorn and the Antarctic Circle is the **South Temperate Zone.** Each is 43° wide.

In the temperate zones the year is divided into the **four seasons**—spring, summer, autumn, and winter.

A little more than half the earth's surface is contained in these two zones. The North Temperate Zone is the one in which we live. All parts of the United States, except the northern portion of Alaska and our Island Regions (see p. 82), lie within it.

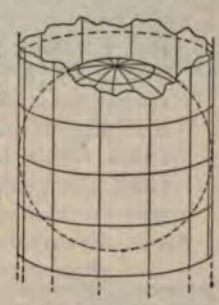
VII. GLOBES AND MAPS.

1. A Globe is the most natural representation of the earth because it is round. Upon its surface may be drawn the divisions of land and water and the earth's circles.

Showing how a map is made by conical projection.

2. Maps are representations of the earth on a flat surface and are more convenient than globes. By means of maps, continents, countries, and smaller sections of the earth's surface may be represented of any size or *scale* desired.

The maps used by navigators are made upon the plan invented by Mercator, a native of Belgium.



Showing how Mercator's chart is made.

In Mercator's Projection the map surface is a hollow cylinder inclosing the globe. The equator and parallels are then drawn upon the cylinder in their proper latitude, and the meridians become straight lines running from top to bottom. All other lines are drawn according to the parallels and meridians thus obtained. The cylinder is then cut open and spread out. The result is a map similar to that on pp. 166–167. It will be noticed that since the cylinder touches the globe at the equator, that circle will be represented at its true size; but as the parallels of latitude are all the same size as the equator, the map will represent places in high latitudes much too large.

Mercator's chart distorts the surface it represents, as every chart must do that attempts to represent on a plane the surface of a sphere; but it distorts in such a manner as to make all places on it preserve their true course from each other. This also makes it easy to take their true distance apart.

All maps in this book, except the two named above, are made either by **Conical Projection** or by **Spherical Projection.** These methods give maps which are most nearly like the countries themselves. As shown in the figures, a cone or sphere is supposed to touch the globe at the parallel which is in the center of the country to be mapped. The map is then obtained in the same manner as Mercator's projection.

Direction is shown on all maps by meridians and parallels. Distances are found by a **scale of miles** attached to each map which usually shows the equivalent in miles of a line one inch long drawn on the map.

Review Topics.—A globe. How may it be divided? Maps. How can we make a map of the world? What part of the map is north? South? East? West? For what is a "scale of miles" used? Who was Mercator? His charts. Other methods of making maps.

PHYSICAL GEOGRAPHY.

VIII. NATURAL DIVISIONS OF THE EARTH.

1. Land and Water.—The surface of the earth is composed of *land* and *water*.

The land forms about one-fourth of the earth's surface; the water about three-fourths.

2. Divisions of Land and Water.—**Bodies of land** are classified, according to size, as Continents and Islands. Certain portions of these are classified, according to form, as Capes, Peninsulas, and Isthmuses.

Portions of land are classified according to variations of surface, as Mountains, Hills, Plateaus, Plains, and Valleys.

Bodies of water are classified as Oceans, Seas, Gulfs, or Bays, Sounds, Straits, Lakes, and Rivers.

IX. THE FORMS OF LAND.

1. Continents.—There are six large masses of land called continents, viz., **North America, South America, Europe, Asia, Africa,** and **Australia.** Since Europe and Asia form a single land mass, they are often described as one continent under the name **Eurasia.**

2. An Island is a body of land that is surrounded by water, as Cuba, Madagascar, New Zealand.

A group of islands is sometimes called an **Archipelago.**

Islands are divided into two classes, continental and oceanic islands. **Continental Islands** are those that lie near the continents, from which they are separated by shallow seas. They are supposed to have once been a part of the continents and to have become separated from them by a sinking of the land. This allowed the water of the ocean to overflow the low places, thus leaving some of the higher elevations along the coast surrounded by water. The plants, animals, and rocks of the continental islands resemble those of the continents near which they lie.

Bird's-eye view of the great land masses called continents, and the waters that separate them. Between the Pacific and Indian Oceans can be seen a part of the sixth continent, Australia.

Oceanic Islands lie at a distance from the continents and are surrounded by deep water. They are either **volcanic** or **coral** islands.

3. A Peninsula (*pæne*, almost; *insula*, island) is a portion of land that is *almost* surrounded by water.

Florida is a peninsula, Arabia is a peninsula, Portugal and Spain together form a peninsula.

4. An Isthmus is a narrow neck of land connecting two larger bodies of land, as the Isthmus of Panama.

A small peninsula, promontory, and cape. This is Monaco, on the Mediterranean coast. The coast line beyond the peninsula curves in, forming a small bay on which the city of Nice is built.

Many important isthmuses are cut by canals to enable ships to pass between the bodies of water on either side of them.

5. A Cape, Point, or Headland is the extreme end of any land projecting into the water, as Cape Hatteras, Cape Horn. A high cape or headland is called a **promontory.** The Lizard at the southwestern end of England is a **point.**

6. A Coast or Shore is that part of the land bordering upon the water.

The character of the **coast-line** is constantly changing. The waves wear away the rocks, crumbling them to sand, and the tides and currents distribute it in **beaches** and **flats** along the shore and at the mouths of rivers.

Changes in the level of the land are more easily seen at the seashore than inland. By the sinking of the coast, the mouths of streams are deepened, forming **fiords** and **estuaries,** thus affording excellent harbors. A rising coast, however, brings the level sea bottom to the surface, forming **coastal plains,** but destroying the harbors entirely or making them too shallow for large vessels.

So important is the coast to a commercial country that governments spend large sums of money in deepening harbors, erecting **lighthouses,** and **signals,** maintaining **life-saving stations,** in making maps of the coast showing depth of water and channels, thus providing for the safety of ships and sailors and for the security of merchants against loss.

7. Mountains are high elevations of land. **A mountain range** consists of a series of mountains. A number of ranges extending in the same general direction is called a **Mountain System. Hills** are lower elevations than mountains.

Mountain ranges were formed by the crumpling up and folding of the rocky layers of the earth's crust, as it contracted to fit the shrinking interior. These mountain folds were pushed up higher and higher by a gradual rising of the land. As the folds became steeper the rocks were crumpled and broken, forming sharp peaks and jagged surfaces. As mountain regions are being raised by forces within the earth, they are being worn down by rain, snow, frost, and glaciers at work on the surface. The wearing away of rock by these agencies is called weathering. (VIII, 2.)

How mountains affect man.—Mountains are barriers to travel, and often serve as boundaries to countries, keeping people from

Montauk Point, the eastern extremity of Long Island, showing lighthouse and life-saving station.

spreading into the regions beyond. They are sometimes crossed by **gaps,** or **passes,** which become important highways of travel and trade. They are usually covered with forests, making a home for animals valuable for their flesh and skins. The fractures in the rock layers of mountains have often been filled with minerals containing gold, silver, copper, and other metals. Such deposits are called **veins.**

The height of mountains is always reckoned from the level of the sea. We can measure the height of a mountain by means of a barometer. At the sea-level the quicksilver in the tube of the barometer stands at the height of 30 inches. Now as the barometer is taken up above the sea, the quicksilver will fall in the tube about one-tenth of an inch for every 60 feet of perpendicular ascent.

View of the Rocky Mountains in Canada. These, like the Alps, are young mountains. Thousands of years will be required for the rain and the atmosphere, the ice and frost to wear down their rugged outlines and to fill up the narrow valleys. Notice the change in vegetation from the foot of the mountains to their summits. At the base one sees flowering plants and trees of considerable height. But as we ascend we find the trees dwarfed and vegetation scanty, until at the tops the mountains are clothed with snow and ice.

The Alps. As the thick layers of rock were slowly crushed together by the contracting of the earth's crust, they crumpled and tilted up along certain lines. As they rise higher, the high peaks which you see here were formed. These are young mountains. We can tell this by their sharp and rugged peaks and by the fossils (remains of animal life) found there. They are still slowly rising, but their tops are being worn down by physical agencies.

8. A Volcano is an opening in the earth through which issue flames, vapors and gases, heated stones, and lava, or melted rock. These materials build up a cone-shaped mountain around the opening which is usually bowl-shaped and is called the **crater.**

Allegheny Mountains in Virginia. These mountains are crumples in the earth's crust and were once much higher, but they are very old. They have been worn down during the ages that have passed, and their tops rounded off by rain and snow, rivers and streams.

Volcanoes are the best proof that the interior of the earth or parts of it are in a highly heated condition. The cause of the explosions that accompany the **eruptions** of volcanoes is the sudden formation of steam caused by water finding its way to the heated rocks.

Volcanoes are usually situated near the coast line. There is a remarkable series of them extending from Tierra del Fuego to Alaska. The most active volcanic region in the world is in the **East Indies.** **Java** is the center of it. This island has twenty-one active volcanoes. Sometimes great injury is caused by volcanoes. Eighteen hundred years ago the cities of **Herculaneum** and **Pompeii,** in Italy, were covered with ashes thrown from Mt. Vesuvius. In 1906 Vesuvius destroyed several towns at its base.

When a volcano ceases to emit flames, and is in process of extinction, it often sends out sulphurous gases, and deposits sulphur in large quantities; it then becomes a **solfatara.**

Allegheny Mountains in Pennsylvania. These mountains were not broken into sharp ridges when the earth's surface contracted, but the horizontal layers of rock were raised slowly, with very little crumpling, forming at first a plateau, out of which the mountains which we see there to-day have been carved by streams and other physical agencies. Their tops, however, are nearly on the same level. Such a mountain region is sometimes called a dissected plateau.

9. A Plateau, or **Table-land,** is an elevated plain, often broken or bordered by ranges of mountains.

The term **Highland** is often used to designate a region of considerable elevation. It may contain lofty mountain ranges; as the Pacific Highland in North America.

10. A Plain is a broad extent of nearly level land.

In North America, the immense plains of the Mississippi Valley are called **prairies.** In South America similar plains are called **llanos** (lyah'nos), **pampas,** or **selvas;** and in Russia and Asia, **steppes.**

11. A Valley is the land lying between hills or mountains, or between ranges of mountains.

12. Deserts are wide wastes of land, sometimes flat and sandy, sometimes hilly, or mountainous, and generally destitute of vegetation and water.

An **oasis** or fertile spot in a desert, is made so by springs which come up to the surface.

Review Topics.—Define continent; island; continental islands; oceanic islands; peninsula; isthmus; cape; promontory. What are mountains? Ranges? Mountain systems? Hills? What is a volcano? A crater? What is a plateau? A highland? A plain? What is a valley? What are deserts? What is an oasis?

The cone surrounding the crater of Mt. Vesuvius, Italy, showing the lava beds, out of which the mountain is partly built.

X. THE WATER.

A plain or prairie in northern Texas. This land was formed, under water, of materials washed down from the mountains by streams and spread out evenly over the ocean bed.

1. The Sea is the vast body of salt water which covers about three-fourths of the globe. It is really *one* body surrounding the continental land masses on every side, but is divided by them into five oceans, known as the **Pacific,** the **Indian,** the **Atlantic,** the **Arctic,** and the **Antarctic.**

Waves.—The surface of the ocean is continually broken into waves and ripples by the wind. Waves are really a movement of the water up and down; but this movement, once started, spreads until the waves break upon shores hundreds of miles away. Waves vary in height from a few inches to fifty feet or more. As they approach the shore, the lower part is held back by friction against the sea bottom, while the top plunges forward as a **breaker.** This constant plunge of breakers against rocky shores undermines the cliffs and grinds the broken fragments to sand and pebbles. This

The ocean. The ocean once covered the entire surface of the earth. Then its water was fresh. When land (then solid rock) appeared, the waves began to wear the rock down and spread the ground-up rock material over the ocean bed. This work has been going on ever since.

sand is partly spread out over the ocean bottom by currents and partly washed back upon the shore, forming beaches that slope gently outward into deep water. The arrangement of the sand depends upon the direction of the ocean currents that flow along the coast. Along the middle and south Atlantic coast of the United States it is piled up in long beaches parallel with the shore. The still water between these beaches and the shore is known as a **lagoon.** Such lagoons are often filled by sediment brought down by rivers and become **salt marshes** or **meadows.**

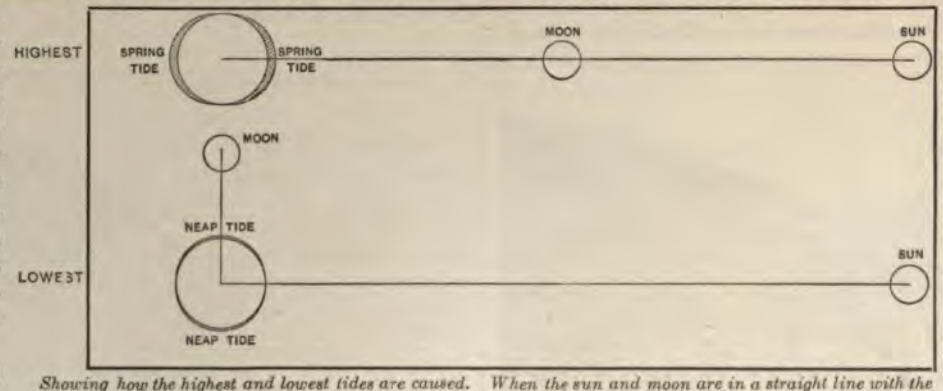
When the sand is deposited across the mouth of rivers it is called a **bar** and becomes a hindrance to navigation. When a sandy beach forms at right angles to the coast it becomes a **spit.** When curved, the spit becomes a **hook.**

Tides.—Everywhere along the seashore and in the mouths of rivers that flow into the sea, we may observe the regular rising and falling of the water called the tides. For six hours the water rises, and it is then **high,** or **flood,** tide; it then falls for six hours and then we have **low,** or **ebb,** tide. High tide occurs at any place when the moon is either over that place or on the side of the earth opposite it. Hence we infer that the tides are caused by the **attraction** that the moon has for the water. During one complete rotation of the earth, each place would come once underneath the moon. But the moon is also moving around the earth in the same direction as the earth rotates. Hence each place is brought underneath the moon, and high tide occurs about fifty minutes later each day.

The ocean beating against the rocky cliffs, showing how the waves break off pieces of rock and grind them into small grains of sand.

A beach, showing breakers rolling up upon the sand. The lower part of the wave, as it reaches shallow water, is checked by friction against the bottom, while the upper part rolls forward and breaks on the beach. The smooth beach shows how the action of the waves levels surfaces.

The **Sun** also attracts the water, but less than the moon because it is so much farther away. When the sun and moon are attracting the water in the same direction, the highest, or spring tide occurs; but when they are attracting it at right angles to each other, we have the lowest or neap tide. The height of the tide varies from a few inches off headlands to sixty feet in inlets with converging shores. The high tide enables ships to pass in and out of harbors that are usually too shallow on account of sand bars that form at their mouths.



Showing how the highest and lowest tides are caused. When the sun and moon are in a straight line with the earth, they attract the water in the same direction, and the highest tides occur. The second view shows the sun and moon at right angles with each other. Since each draws the water toward itself, it is evident that the tide will be lower than when both are attracting the water in the same direction. The result is the lowest or neap tide.

2. A Bay, Gulf, or **Sea,** is a sheet of water partly surrounded by land; as the Red Sea, Hudson Bay, the Gulf of Mexico. Some bays are called **bights;** as the Bight of Benin.

3. A Strait, Pass, or **Passage,** is a narrow channel that connects two larger sheets of water; as the Strait of Gibraltar.

4. A Sound is a passage of water or strait not having much depth; as Long Island Sound.

Chart showing the circulation of the waters of the ocean. Study the location and direction of the different currents. Notice that in the equatorial regions the general direction of the currents is eastward. In the temperate regions, it is westward. Compare with the directions of the winds in chart on page 18.

5. An Ocean Current is a stream flowing through the ocean, as the Gulf Stream.

Ocean Currents seem to be mainly caused by the winds. The fact that they move in the same direction as the wind and change their courses when the wind changes,

Echo Lake, in the White Mountains of New Hampshire. A dam was built across the narrow valley with bowlders from a glacier which imprisoned the waters and formed this lake, which is fed by springs.

Au Sable river in the Adirondack Mountains, New York, showing how rivers cut their way through the hardest rocks, forming a gorge or chasm. This process requires thousands of years. But it is only the beginning of valley formation.

is proof of this. The equatorial currents are driven west by the trade winds. Striking the shores of the continents they are deflected to the northeast and circle about the regions of tropical calms in **whirls** and **eddies.** Notice the direction of these eddies in each hemisphere and compare with the direction of the winds.

Warm and Cold Currents.—Ocean currents are important equalizers of temperature. The equatorial currents move toward the polar regions and are *warmer* than the neighboring waters, while the polar currents moving toward the equator are *colder* than the waters near them. Hence the winds blowing over these currents are either heated or cooled, and as they pass over the bordering coasts they give to them their own temperatures.

Valley of the Mohawk, New York.

The **Gulf Stream** originates in the great Equatorial Current of the

A sugar plantation in Louisiana. This is also a plain made up of material brought from the mountains by the Mississippi river and its tributaries. When the river overflowed its banks this material was deposited and a plain was gradually built up. Land formed in this way is called alluvial land, or a flood plain. On the map of Louisiana, page 59, you can see how the Mississippi river is using the material which it brings down to build up land at its mouth.

Atlantic. The temperature of its waters, as they pass the Strait of Florida, is often as high as 85° Fahr.

They cross the Atlantic, carrying with them sufficient warmth to give the Orkney Isles, in latitude 59° north, an extraordinarily mild climate.

6. A Harbor is a sheltered arm of the sea where ships may anchor and ride in safety.

INLAND WATERS.

7. A River is a stream of fresh water formed by the union of smaller streams, which are called **branches** or **tributaries.**

Wide river valley in Virginia.

The **source** of a river is the place where it begins. This may be a spring, a lake, or a glacier Sometimes a river is formed by the confluence of two other rivers as in the case of the Ohio. Its **mouth** is the place where it flows into some larger river, into a lake or the sea.

The **bed** of a river is the land over which its waters flow.

The **right bank** of a river is that bank which would be on our right hand if we were going down the stream. The other is the **left bank.**

8. A river and its tributaries together form what is called a **river system.**

9. The basin or **valley** of a river is the country through which the river and its tributaries flow.

As rivers flow from the higher to the lower parts of a country, we can tell, by *observing the course* of the rivers, in what direction the land slopes.

Offices of Rivers and Streams.—Rivers cut natural gutters or drains for carrying the water back to the sea after it has performed its manifold offices.

More clearly to understand the **offices of rivers,** let us follow in imagination the water which feeds them, from the time it comes from the sea as a vapor, until it returns to the sea again through the river.

It has formed clouds which screen the earth from the heat and cold; it has been condensed into rain, and refreshed the land with showers; it has fed the springs and wells; it has worn away the rocks, and gathering from them the materials of which rich and fertile soil is made and spreading it out over their plains; and while it has been doing all this, it has turned mills, driven machinery, floated ships and boats which carried the produce of the land from one place to another.

10. A Lake is a body of water surrounded by land; as Lake Superior, the Great Salt Lake, Lake Victoria.

Review Topics.—The sea and its divisions. What is a bay, gulf, or sea? What is a strait? A sound? What is said of the Gulf Stream? A harbor. A river. The source of a river. The mouth. The bed of a river. What is a river system? What is a river basin? How can you tell the slope of the land? What are the offices of rivers? What is a lake?

XI. THE WINDS.

1. Winds are currents of air. They are mainly caused by one part of the atmosphere becoming hotter or colder than another. Whenever this takes place, the air moves

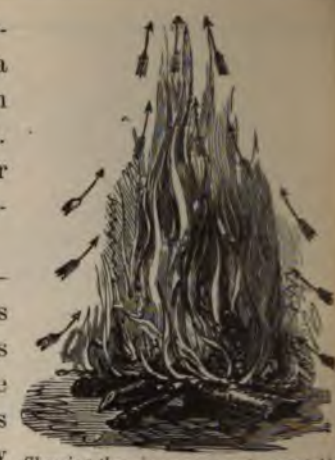
Air Movements.—If a fire be kindled in a fireplace or stove, the air in the fireplace or stove is heated, becomes lighter, and is pressed upward by the cooler, heavier air of the room. The air now flows steadily from all parts of the room toward the fireplace or stove.

The air movements started in a room containing a heated stove and an open window. The cool air being heavier descends and flows along the floor toward the stove. Here being heated it expands, becomes lighter and rises flowing along the top of the room and out at the top of the window.

The rays of the sun are like such a fire. They are always heating the air more in some places than in others. At the Equator and within the tropics **they fall vertically,** and consequently the air within the tropics is hotter than elsewhere. Hence, like the air near the stove, it constantly rises, being **pressed upward** by currents of cooler air which are always flowing in from the colder regions north and south.

2. Trade-Winds.—Thus there are two cold currents of air always flowing from the poles toward the Equator. Within the tropics these become **surface-winds.** Owing to the revolution of the earth from west to east, the current from the north pole becomes a north-east wind, and the one from the south pole a south-east wind. These winds are called, from their value to commerce, or from their constant direction, the Trade-Winds.

3. The Counter-Trade-Winds.—The heated air rising within the tropics flows in two currents toward the poles in a direction opposite to that of the Trade-Winds. These return currents are the Counter-Trade, or **Westerly Winds.**



Showing the air movements created by building a fire in the open air. A strong current of cold air sets in toward the fire and the heated air rises and flows outward in every direction. Extensive fires, like the burning of Moscow and Chicago, have been followed by furious tornados.

As they proceed toward the poles they gradually become cooler and heavier; they descend, and in the temperate regions becomes **surface-winds.** In the northern hemisphere they come from the south-west, and in the southern hemisphere from the north-west.

North and South Movements of Wind Belts.—All of these wind belts are separated by **belts of calms.** When the sun is north of the equator, all these belts are proportionally further north, and when the sun moves south all the wind and calm belts are proportionally further south.

4. Land and Sea Breezes.—All along the sea-shore during the warm season there is a breeze from the sea by day, and one from the land by night.

The land is heated more readily than the sea, and at night it cools more rapidly.

During the day the air above the land becomes hotter than that above the water. A current of warm air ascends over the land, while currents of cooler air flow in from the sea. Thus we have the **sea-breeze.**

During the night the air over the land having become cooler than that over the sea, the current sets toward the sea, and thus we have the **land-breeze.**

5. Monsoons are land and sea breezes on a large scale. Instead of alternating with day and night, they alternate with summer and winter, and blow for months at a time.

The most famous are those of India. The sun's rays beat with intense force upon the desert regions of Asia. The hot air rises in a mighty current, and there is an inrush of cooler air from the Indian Ocean toward the land.

6. Offices of the Winds.—The winds are carriers of heat and moisture. They are the cause of ocean currents (x. 5), and their power drives thousands of ships across the oceans carrying the commerce of every land.

A chart of the wind and rain belts. Direction of winds is indicated by arrows. When the arrows point in opposite directions in the same area they indicate a shifting of the winds at different seasons. The area and directions of cyclones is shown by a number of arrows pointing toward the center and curved in the direction in which the wind whirls.

As they blow over the surface of the sea they acquire the temperature of the water, and hence may become either **warm** or **cold winds.** They also gather up vast quantities of vapor which is carried over the land to fall in the form of rain or snow.

Review Topics.—What are winds? Cause? Give an illustration. What portion of the earth is the hottest? How does this heat affect the air? Where does the cold air come from to take its place? The trade-winds. What is their direction? The counter-trades. The sea-breeze. The land-breeze. Monsoons. The most famous? Offices of winds.

XII. CLIMATE.

Effect of latitude on vegetation. This is in the cold temperate region of Canada. The higher elevations have only a scanty covering of grass and dwarfed trees. But in the lower lands there are tall pines and a fine orchard of apple trees. The grass is thick and luxuriant. The fences and houses built of lumber show that timber is abundant in this region.

1. Climate is the condition of the air with reference to heat and moisture.

It depends upon latitude, elevation, distance from the sea, the prevailing direction of the winds, and the flow of ocean currents.

2. Effect of Latitude.—The nearer the Equator, as a rule, the warmer the climate; because the Torrid Zone is the region of vertical sun-rays.

From the Equator toward the poles the climate gradually grows colder, until we reach the regions of perpetual snow and ice. Between these regions and the Torrid Zone lie the Temperate Zones, which have a comparatively moderate climate.

Besides having a higher temperature, the Torrid Zone has a greater rainfall than any other portion of the earth.

Effect of latitude on vegetation. This is a dense jungle in the tropical regions of South America. Here vegetable growth is so rapid that it is difficult to keep the fields cleared and the roads open.

Over this zone hovers the Equatorial **Cloud-Ring,** which is a belt of clouds extending nearly round the earth. It consists of the vapor brought together by the north-east and south-east trade-winds. It causes almost daily thunder-showers along the line of the Equator.

The cloud-ring follows the course of the sun north and south in his apparent journey between the tropics, and brings the **rainy season** to those places which are under it. When it has passed beyond the latitude of any place, the **dry season** of that place begins.

Effect of latitude on vegetation and animal life. This is a view in Greenland. The vegetation is scanty. There are no trees and the glaciers come all the way down to the sea level. There is no timber to build houses, but the people live in tents made of the skins of animals. These are their summer homes. In winter they live in stone huts which are partly under ground (see page 92). The dogs seen in the picture are the only domestic animals known to these cold regions.

3. Effect of Elevation.—The temperature on the top of a mountain is lower than at its foot.

Illustration.—The heat absorbed by the earth is prevented from escaping by the dense, moist layers of air that rest upon the surface. The air on the mountains being both drier and lighter, the heat received from the sun is quickly lost. For these reasons temperature decreases regularly with elevation.

There is in all latitudes a line of elevation above which the cold is, at all seasons of the year, sufficient to freeze the moisture of the air and form snow. This line is called **the Snow-Line.** The snow-line at the Equator (as shown in the diagram) is 16,000 feet above the sea; so that there are mountains in the Torrid Zone on the tops of which the weather is like that of the Arctic regions.

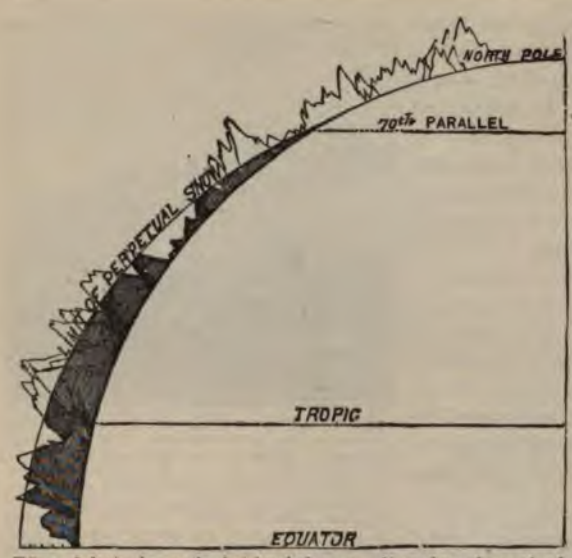
Effect of latitude on vegetation. This is a view in the warm temperate regions of Southern France. A grove of olive trees is shown many of which are several centuries old. Notice the large branching trunks and the great circumference near the ground. The grass is thicker and the general vegetation more luxuriant than in the last picture.

The peak of **Antisana,** in South America, although under the Equator, rises so high as to reach perpetually frozen regions.

In descending these snow-capped mountains in the tropics, we experience in a single day, in a ride of a few hours, all the changes of climate that would be felt in travelling from Spitzbergen to Cuba.

Effect of Mountains on Rainfall.—The cold air above mountain-tops condenses the moisture brought by the winds from the sea, into rain or snow which falls upon the mountains. Thus the mountains feed the rivers.

The snow and rain that fall upon the **Rocky Mountains** supply immense volumes of water to the Mississippi. The snow that crowns the **Himalayas** and gives them their name (*abode of snow*), with the rains that descend upon their slopes, feeds the Indus, the Ganges, and the Brahmaputra. The great rivers of South America are fed by the melting snows of the **Andes.**



Effect of latitude on the height of the snow line above the sea level. The snow line is much higher in summer than in winter and higher on the south side of mountains than on the north side. Can you explain this?

If the continents were entirely level, the winds would often sweep across them from sea to sea without letting a drop of water fall upon the land.

By their slopes, also, mountains determine the course of rivers, and therefore are often called **water-sheds, or divides.** Hills and low ridges also frequently serve as water-sheds.

4. Effect of Sea Winds.—The ocean is warmer in winter and cooler in summer than the land. Countries, therefore, in which the prevailing winds come from the sea have warmer winters and cooler summers than might be expected from their latitude.

The island of **Great Britain** and the province of **Labrador** lie between the same parallels of latitude. Yet such is the difference of climate between them, that while in England the pastures are green all the year, Labrador is so cold as to be almost uninhabitable.

In the British Isles the winds come from the ocean. They are loaded with moisture and warmth from the **Gulf Stream.** In Labrador they come from the land, and are dry and cold. Again, the climates of **Oregon** and **British Columbia** are mild, because the prevailing winds come from the Pacific Ocean.

Showing the isotherms of North America. Compare the average temperature along the Atlantic Coast with the temperature in the same latitude on the Pacific Coast. Trace the isotherm of 50° across the Continent and explain the changes in direction.

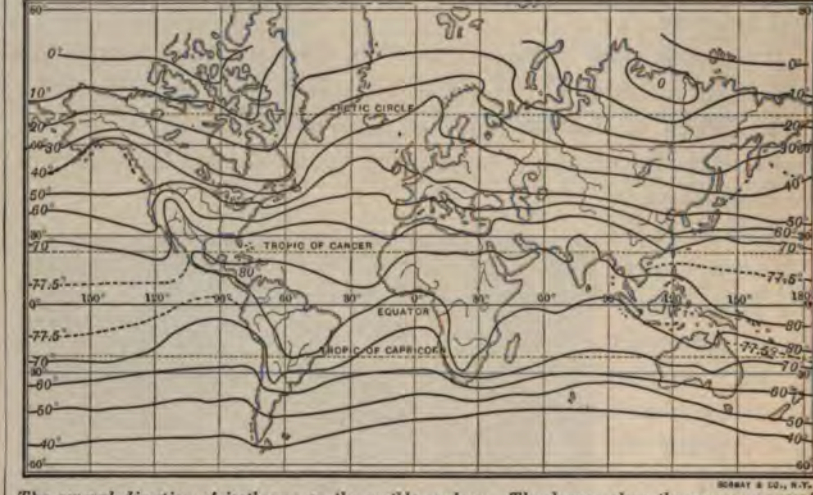
A mountain above the snow line in tropical South America. Notice the dense growth on the low plain along the river and how it diminishes gradually until at the mountain top you see the region of perpetual snow.

Large bodies of fresh water also, such as the **Great Lakes,** modify climate. Southern Michigan owes its comparative mildness to this cause. The biting west winds are tempered as they sweep over Lake Michigan.

5. Isotherms (isos, *equal;* thermos, *heat*) are lines drawn through all places having the same average annual temperature.

The figures attached to them on the map indicate the average temperature during the year.

The striking **bends** of these isotherms are due to the combined agency of the winds, the great currents of the ocean, the moisture in the air, and the height above the sea-level. The **isotherm of New York,** soon after leaving the Atlantic coast, is bent northward by the warm Gulf Stream, and comes out on the other side of the Atlantic, nearly 900 miles farther north than New York. Again, the isotherms of the **California coast** are bent sharply southward by the chilling ocean current near that coast.



The general direction of isotherms on the earth's surface. The degrees show the average annual temperature. Notice that the lines are very irregular. This is due to elevation, the ocean currents, and to the prevailing winds. Notice that, as a rule, the lines bend northward over the oceans and southward over the land. Can you explain this in the case of the Atlantic Ocean and of North America?

6. Industries and Climates.—The geographical distribution of agricultural labor is almost wholly determined by climate. There are other industries, however, such as mining and manufacturing, that are, to a certain extent, independent of climate.

Review Topics.—Climate. On what does it depend? Effect of latitude. What is said of the moisture of the torrid regions? The equatorial cloud-ring. What is the effect of elevation? What is the snow-line? What is the effect of sea winds? Compare Great Britain and Labrador. Why have Oregon and British Columbia such a mild climate? What gives Southern Michigan a comparatively mild climate? Isotherms. What is said of the isotherm of New York? How is labor affected by climate?

XIII. PLANTS AND ANIMALS.

1. The earth is clothed with vegetation and animated with living creatures: these are called its **Flora** and its **Fauna.**

2. The Geographical Range of a plant is the extent of the earth's surface within which that plant will thrive in the open air. Each kind of plant has its special geographical range; for its growth depends upon **light, heat,** and **moisture.**

Arctic or North Frigid Zone: 1. *Fur seal.* 2. *Musk ox.* 3. *Reindeer.* 4. *Kodiak bear.* 5. *Polar bear.* 6 *Walrus.*

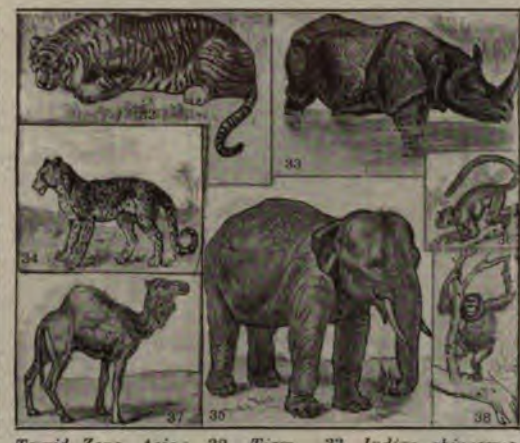
Thus the cinchona tree, the rubber tree, and the pineapple grow only in or near the Torrid Zone, where great heat and excessive moisture produce the most luxuriant vegetation; while hemp, flax, and buckwheat find their home in the Temperate Zone.

North Temperate Zone, North America: 7. *American elk.* 8. *Rocky mountain goat.* 9. *Rocky mountain sheep.* 10. *Prong-horn antelope.* 11. *Bison.* 12. *Bald eagle.* 13. *Cougar.* 14. *Brown pelican.* 15. *Rattlesnake.*

North Temperate Zone, Europe and Asia: 16. *Chamois.* 17. *Red deer.* 18. *Ibex.* 19. *Osprey.* 20. *European brown bear.* 21. *Hedge hog.* 22. *Wolf.*

3. Torrid Zone.—The richest fruits, the most brilliant flowers, and the greatest variety of useful plants are found in the Torrid Zone.

Torrid Zone, South America: 23. *Three-toed sloth.* 24. *Condor.* 25. *Spider monkey.* 26. *Macaw.* 27. *Anteater.* 28. *American tapir.* 29. *Anaconda.* 30. *Jaguar.* 31. *Brazilian caiman.*



Torrid Zone, Asia: 32. *Tiger.* 33. *Indian rhinoceros.* 34. *Active gibbon.* 35. *Asiatic elephant.* 36. *Common maque monkey.* 37. *Camel.* 38. *Orang-outang.*

Torrid Zone, Africa: 39. *Giraffe.* 40. *African elephant.* 41. *Ostrich.* 42. *Hippopotamus.* 43. *Klipspringer.* 44. *Lion.*

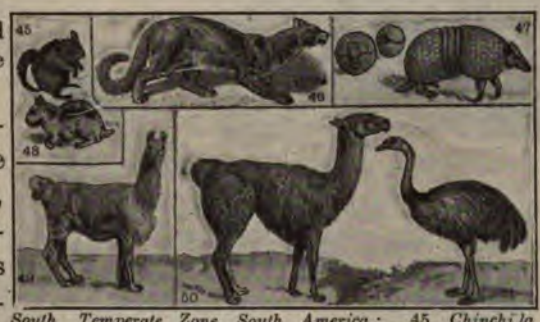
The following are the most noted: the coffee-tree, the banana, the pineapple, and the palm, the bread-fruit and the mango, India rubber and gutta-percha, the cinchona and the aloe.

4. Temperate Zones.—In the Temperate Zones we find the grains (wheat, corn, rye, oats, and barley), with hemp, flax, and many other useful plants. Among the trees are the beech and the chestnut, the elm, oak, maple, and many fruit trees.

Those parts of the temperate zones lying next to the torrid are called the **sub-tropical, or warm belts.** Here rice is the leading grain, and cotton, tea, the fig, magnolia, and mulberry flourish. The middle belt of the temperate zone is called the grain belt, or the **cool belt.** Wheat and corn are the leading grains, and the apple, pear, oak, hickory, chestnut, and walnut trees flourish. The belts lying next to the frigid zones are called the **cold belts.** Oats and barley are the principal grains, and firs, birches, spruces, and larches grow.

Between the belts of plant life the lines are nowhere sharply drawn. The plants of one belt are found growing in the belts on either side, though not in such perfection.

5. Frigid Zones.—The vegetation of these zones consists chiefly of lichens and mosses. None of the great agricultural staples, except perhaps barley, will grow there.



South Temperate Zone, South America: 45. *Chinchilla* 46. *South American panther.* 47. *Three-banded armadillo.* 48. *Viscacha.* 49. *Vicuna.* 50. *Guanaco.* 51. *Rhea.*

South Temperate Zone, Australia: 52. *Wombat.* 53. *Apteryx.* 54. *Duckbill.* 55. *Duckbill rolled into a ball, asleep.* 56. *Koala.* 57. *Chæropus.* 58. *Rock kangaroo.* 59. *Tree kangaroo.* 60. *Red kangaroo.*

Antarctic or South Frigid Zone: 61. *Whale.* 62. *Walrus.* 63. *Penguins.* 64. *Great auk.* 65. *Sea lion.* 66. *Antarctic seal.* 68. *Albatross.*

6. Animals, like plants, have their geographical range. In the **Torrid Zone** we find the largest and most powerful land animals, as the elephant, lion, and tiger; in the **Temperate Zone,** the domestic animals, as the horse, ox, and sheep; in the **Frigid Zone,** the polar bear, reindeer, and walrus.

Man, unlike the other animals, inhabits every region where food is obtainable.

Review Topics.—What do you mean by the flora of a country? The fauna? What is the geographical range of a plant? Upon what does the growth of plants depend? The plants of the Torrid Zone. Name some of the trees and plants peculiar to the Temperate Zones. What is said of the Frigid Zones? Where are the largest animals found? The most useful animals found? The animals of the Frigid Zone. The range of man. What is said of the population of Siberia? Hammerfest.

POLITICAL GEOGRAPHY.

XIV. MAN.

1. The Human Family, which consists of about 1,600 million persons, may be divided, according to the different social conditions of men, into four classes, viz.: **savage, barbarous, civilized,** and **enlightened.**

The savage stage. An African village.

2. Savages have no knowledge of the arts.

They live by hunting and fishing, and wear the rudest kind of clothing.

3. Barbarous nations have made little progress beyond the savage. Some of them live in tents, lead a wandering life, and are sometimes called **nomads.**

They are called nomads (from a word meaning pasturage) because, when the grass in one place has been eaten by their flocks, they move to another. Some are acquainted with agriculture and the simpler arts.

Barbarism. A home in central Asia.

4. Some **civilized** nations, like the Chinese and the Turks, live in towns and cities, understand many arts, have a written language, and have made considerable advancement in intelligence and morality. But their civilization has become stationary, and they have ceased to make progress in the arts of life.

Civilization. Morocco.

5. Enlightened nations, such as the English and the French, carry on commerce extensively, and by constant intercourse with one another improve rapidly. Science and invention belong to them.

They employ machinery on a vast scale. They establish schools and other institutions of learning, and their systems of government are intended to secure the good of all rather than to gratify the will of a few.

6. Races.—Men are also classified, according to form, feature, and color, into five great races: the **Caucasian,** the **Mongolian,** the **Malay,** the **American Indian,** and the **Ethiopian.**

The American Indians and the Malays of southeastern Asia are now thought to be remote branches of the Mongolian race. This reduces the distinct racial types to three—the white, the yellow, and the black.

7. The Caucasian or **White** race had its origin in the western part of Asia. All the nations of Europe, except the Lapps, Finns, Turks, and the Magyars of Hungary, belong to this race. The descendants of Europeans have spread over the world, and now both Americas are governed by them.

The members of this race are the most enlightened and the most enterprising of the races, and are rapidly colonizing, civilizing, and enlightening the world.

8. The Mongolian or **Yellow** race occupies a large part of Asia, and includes the Eskimos of America, and the Lapps, Finns, Samoiedes, Magyars, and Turks. The leading nations belonging to this race are the Japanese and Chinese.

Among the Mongolians are tribes of every grade of civilization, from the Eskimos, who are mere savages, to the progressive Japanese.

9. The Malay or **Brown** race occupies most of the islands of the Pacific, but is giving way before European colonists.

The color of the Malays varies from olive-yellow to black. Some scientists include the Malays among the divisions of the Mongolian race.

10. The American Indians or **Red** race are tall, erect, and somewhat dark.

They were mostly savages, but there are remains of ancient civilization in many parts of the New World, particularly in Mexico and Peru.

11. The Ethiopian or **Black** race is found chiefly in Africa, where it is for the most part in a savage state. Its descendants in America are civilized.

Review Topics.—What is the population of the world? How is the human family divided? Savages. Barbarous nations. Civilized. How do civilized differ from barbarous? Enlightened nations. The races. Caucasians. Mongolians. Malays. American Indians. The Ethiopian.

XV. INDUSTRIAL PURSUITS OF MAN.

1. Man requires **food, raiment,** and **shelter.** To secure them he resorts to various occupations.

2. Industrial Pursuits.—The leading occupations or industrial pursuits are agriculture, fishing, mining, manufacturing, commerce and transportation.

The enlightened stage. A view of New York City from the harbor.

Agriculture includes tilling the earth to obtain useful plants, and grazing, or the raising of flocks and herds.

Fishing includes the taking of fish from fresh and salt waters.

Mining is the digging of valuable ores and minerals from the earth, and refining them.

Manufacturing is the working up of all sorts of raw material, into more useful and valuable shapes.

Commerce includes buying and selling, and the exchanging of the products of one country, or section, for those of another.

Transportation includes the carrying of people and products from one place or country to another.

3. Why Industries Vary.—Many industries depend upon climate, situation, and wants of the country.

In **Louisiana,** for example, the cultivation of the sugar-cane is an important branch of industry.

In **Maine** the cutting and gathering of ice from the frozen lakes and rivers in winter is an important industry.

There are no frozen lakes and rivers in Louisiana; and no cane-fields in Maine, simply because climate forbids. For this reason the industries of these sections differ.

The occurrence of minerals, such as coal, iron, gold, silver, lead, salt and petroleum, largely affect the industries of men.

How Coal and Iron Affect Industries.—Countries abounding in coal and iron are extensively engaged in manufacturing. Coal is necessary both for fuel and for the manufacture of iron and steel machinery. Being heavy substances to transport, manufacturing can be carried on more cheaply where these two minerals are found together.

Review Topics.—What does man require? The leading industrial pursuits. Agriculture, grazing, fishing, mining, manufacturing, commerce. On what do industries depend? Compare Louisiana and New England. Why are the English so largely employed in manufacturing? How much coal does Great Britain use in manufacturing? What is the value of her manufactured exports?

St. Peter's, at Rome. The largest church in the world.

XVI. RELIGIONS.

1. All people have some kind of religion. The principal forms of religion are—**Christianity, Judaism, Mohammedanism, Buddhism, Brahmanism,** and the religion of the **Guebres** (*Gue'berz*).

2. Christianity.—Christians believe in the Bible as the Word of God, and in Jesus Christ as the Son of God. All the nations of America, and all those of Europe, except the Turks, profess the Christian religion.

In Asia and Africa there are some Christian communities, and Christianity is gradually gaining converts in both these continents. Only about one-third of the inhabitants of the globe, however, profess the Christian religion.

3. Judaism.—The Jews believe in the Old Testament, but not in the New.

4. Mohammedanism.—The Mohammedans believe that "There is one God, and Mohammed is his Prophet."

The **Koran** was written by Mohammed about 600 years after Christ. It is the Bible of his followers. The Turks, Arabs, and Persians, and many other inhabitants of Asia and Africa, are Mohammedans.

5. Buddhism.—Buddha was the founder of this religion. His followers, who comprise one quarter of the human family, do not believe in any God. They insist on the practice of charity.

Most of the people of Eastern and South-Eastern Asia are Buddhists.

6. Brahmanism.—The Brahmans are very numerous. They are the leading religious sect of India, from which they drove most of the Buddhists by persecution.

They believe that God is in everything—in the shining light, in the moving wind, in the falling rain, in the animals, and of course in man himself. *Juggernaut* is one of their most famous idols.

7. The Guebres or **Parsees** are the followers of Zoroaster. The sun and fire are with them emblems of the Deity.

They are the so-called **fire-worshippers** of Persia and India.

Review Topics.—Name the principal forms of religion. What do Christians believe? Which two continents are inhabited chiefly by Christians? Do you find many Christian communities in Asia and Africa? What is said of the Jews? What is the great doctrine of the Mohammedans? What is the Koran? Who wrote it? Name some Mohammedan nations. What is said of Buddhism? Of Brahmanism? What is Juggernaut? The Guebres.

XVII. GOVERNMENTS.

1. Government and its End.—All people require government of some sort; otherwise the strong would oppress the weak.

2. Kinds of Government.—Civilized governments of the present day may be reduced to two kinds—the **Republican** and the **Monarchical.**

3. A Republic is a State in which the President, or head of the government, is elected by the people to serve for a certain time. The laws are made by representatives also chosen by the people.

4. A Monarchy is a government in which the ruler inherits his office and holds it during life.

Of monarchies there are two kinds: **Absolute,** in which the will of the sovereign is the supreme law of the land, and **Limited,** in which the laws are made by representatives of the people.

Russia and Turkey are absolute monarchies; all the other monarchies of Europe are limited.

A monarchy may be a **Kingdom,** or an **Empire.** The sovereign is usually called King, Queen, or Emperor.

The Best Government.—The kind of government best suited to any country depends upon the people who inhabit it. Where the people are of a high degree of intelligence, it is thought best to give every one a share in the government, as in republics and limited monarchies; but to give this right to ignorant persons would only result in confusion and bad government. The simplest form of government is that of the tribe, where all are ruled by the will of a single chief. As people increase in numbers and intelligence they demand a larger and larger share in the government, until at last they take entire control of it.

Review Topics.—The use of government. Kinds. Republic. Monarchy. How many kinds of monarchies? Define them. How are the States of Europe governed?

MAP STUDIES.

THE HEMISPHERES.

General Questions.—By what meridian circle have we here divided the earth into hemispheres? What circle divides the earth into a northern and a southern hemispere? Which hemisphere contains most land, the eastern or the western? Which hemisphere contains the most water, the northern or southern?

Continents.—In which zone do you find the greatest proportion of land? What continents do you find in the western hemisphere? In the eastern? What continent lies partly in both? What continents lie wholly north of the Equator? Which are divided by the Equator? By the Tropic of Cancer? Tropic of Capricorn? The Arctic Circle? Through what part of Europe does this circle pass? How are North and South America united? Asia and Africa? What sea and strait separate Africa and Europe? In what direction does North America lie from Europe? From Africa? In what direction is Australia from Asia? From South America.

Islands.—In which ocean are most of the islands of the world? What important group off the western shores of Europe? What islands off the coast of Asia form a great empire? What large islands between Asia and Australia? Which is the largest island in the world? Ans. *Papua*. What large island east of Africa? What group southeast of the United States? What group incloses Bering Sea? Where is New Zealand? Ceylon? What island south of Australia? North?

Capes.—What is the most northerly cape of Europe? The most southerly of South America? The most southerly capes of Africa? The most easterly? The most southerly of India?

Mountains.—Where are the Rocky Mountains? The Andes? The Alps? The Himalayas? The Atlas? In what direction do the mountain ranges of the western hemisphere extend? Those of the eastern?

Deserts.—What are the two great deserts of the world? In which continents are they?

XI. THE HEMISPHERES.

1. If we divide the earth into hemispheres, as above, we have what are called the Eastern and Western Hemispheres.

2. **The Western Hemisphere** contains North and South America, and is called the **New World.**

3. **The Eastern Hemisphere** contains Europe, Asia, Africa, and Australia.

Europe, Asia, and Africa are called the **Old World,** because our ancestors lived there thousands of years before the New World was found by Columbus.

The Eastern Hemisphere has nearly twice as much land as the Western.

4. **Asia** and **Africa** are connected by the **Isthmus**

of **Suez**, and No
the **Isthmus of**

Both of these i
large contine
nish importa
oceans and se

5. **The earth**
Equator into **No**

6. **Europe, A**
the Northern H
Temperate Zone.

Their **coast lin**
gulfs, which
The Northern

RLD

ES.

MAP STUDIES.

THE HEMISPHERES.

Oceans.—Which is the largest ocean? How much of the Western Hemisphere does it cover? *The Pacific is remarkable for the number of islands contained in it, and for the belt of volcanoes that encircles it.* Between what continents is the Atlantic? *The Atlantic is the only ocean which is widely open on the north. Moreover, it reaches, like a long valley, from pole to pole, and forms the only ready channel for the exchange of the polar and equatorial waters.* Which is west of North and South America? Which is east? Which is north of North America? Which is west of Europe? South of Asia? *The Indian Ocean is remarkable for the violent hurricanes which sweep over its waters.* What ocean east of Asia? North? East of Africa? West? South? Where is the Antarctic Ocean?

Seas, Bays, and Gulfs.—Where is the Sea of Japan? The China Sea? Bay of Bengal? Arabian Sea? Red Sea? Mediterranean? Gulf of Guinea? Caribbean Sea? Gulf of Mexico? Bering Sea? Hudson Bay? In which oceans do we find Sargasso Seas? *These are immense areas of the ocean covered with seaweed. The ocean currents move about them in whirls.*

South America by

ous because they join also because they fur- routes between great

lso divided by the hern Hemispheres.

h America lie in are chiefly in the

nland seas, bays, and ommerce.
e seat of knowledge,

civilization, and power. It is the **commercial hemisphere.**

7. The southern continents are South America, Africa, and Australia. They lie principally in the Torrid Zone.

Compared with the other continents, they are marked by lack of coast indentation, and hence do not afford the same facilities for commerce.

Review Topics.—Hemispheres. What continents are in the Western Hemisphere? What does the Eastern Hemisphere contain? What is meant by the Old World? Which hemisphere contains the most land? How are Asia and Africa connected? North and South America? What makes these isthmuses famous? What continents does the Northern Hemisphere contain? In what zones are they? What is said of their coast lines? Which is the commercial hemisphere? Name the southern continents. In what zones are they?

Lakes and Rivers.—What great lakes in Africa? Western Asia? Where are the great lakes of the Western Hemisphere? Where is the Amazon? Mississippi? In what directions do these flow? Where is the Nile? Yenisei? Yăng-tse-kiang?

Voyages.—On what oceans would you sail in going from America, in a southeastwardly course, to Australia, thence to California? What oceans would you sail on in a voyage from New York to Calfornia, by way of Cape Horn? From New York to China, by way of the Cape of Good Hope? From Cape Horn to the Cape of Good Hope?

Latitude and Longitude.—Where would a ship be if she had no latitude and no longitude? Suppose a ship in latitude 20° north, longitude 160° west, what islands is she near? Suppose a ship in longitude 160° east, latitude 30° south, and sailing westward, what coast is she nearing?

NORTH AMERICA.

XIX. PHYSICAL FEATURES.

1. North America stretches from the Arctic regions to the Torrid Zone, and embraces a great range of latitude, diversity of climate, and variety of vegetable productions.

2. Surface.—The continent is divided into three great sections: I. The **Atlantic Plain** and **Appalachian Highland**; II. The **Great Central Plain**; III. The **Pacific Highland and Slope.**

3. The Atlantic Plain is the country lying between the ocean and the Appalachian Mountains.

Appalachian Highland—The Blue Ridge at Sapphire, N. C.

MAP STUDIES.—What oceans nearly surround North America? What ocean current on the western coast? The southeastern coast? What is its direction? What current passes toward Newfoundland from the Arctic regions? What bay indents the northern part of the continent? What peninsula east of it? What gulf south of Labrador? What great gulf indents the southeastern coast? What peninsulas nearly enclose it? What channels lead to it? What is the general direction of the Atlantic coast? Of the Pacific? What large peninsula forms the northwestern extremity of the continent? What strait separates it from Asia? What gulf indents the western coast? What peninsula west of this gulf? What land east of Baffin Bay? Island east of Greenland? What islands between North and South America? Name the four largest. In what zone do they lie? What sea south of them? What island east of the Gulf of St. Lawrence? What isthmus unites North and South America?

Surface.—What does each color on the map show? Is most of the continent high or low? What is the most elevated portion? Where does the chief lowland lie? What elevation of land divides the Central Plain? Name its southern portion. What ocean on the north? Gulf on the south? What highlands near the eastern coast? Their general direction? What region between the Appalachian Highland and the sea? What highland region in the west? What mountain system? What is its direction and extent? What mountains near the Pacific coast?

Rivers and Lakes.—What great river system drains the southern part of the Central Plain? What rivers drain the northern part? Into what do these rivers flow? What lakes are drained by the St. Lawrence? In what direction does this river flow? In what direction do the rivers of the Atlantic Plain flow? Name the chief rivers of the Pacific Slope.

Vegetation and Animals.—Trace the northern limit of trees. What plants grow north of this limit? How far north do barley, oats, and flax grow in the western part of the continent? In the central? In the eastern? How many degrees farther north do they grow on the Pacific than on the Atlantic side? Judging from this, which side of the continent has the milder climate? Account for the difference. Where does the line pass, south of which there is seldom any snow? Where do we find the whale? The walrus? The seal and sea-otter? The eider-duck? The cod, mackerel, and herring? Sponges, coral, green turtle? On what part of the continent are fur-bearing animals found? The grizzly bear? The elk?

The Great Central Plain in North Dakota.

4. The Appalachian Highland comprises the ranges known as the Appalachian Mountains. These extend from the Gulf of St. Lawrence nearly to the Gulf of Mexico.

Atlantic Plain near Wilmington, N. C., showing live oaks with Spanish moss.

5. The Great Central Plain reaches from the Arctic Ocean to the Gulf of Mexico. It lies between the two Highland regions.

Near the head waters of the Mississippi this plain is crossed by a low ridge, called the **Laurentian Highland,** which divides it into two great slopes. One inclines to the north, and sends its waters into the Arctic Ocean, the other to the south, draining the Valley of the Mississippi. From Minnesota the Laurentian Highland may be traced northward of the Great Lakes toward the Atlantic. The highest point is reached in Minnesota, where the source of the Mississippi is 1,600 feet above the sea-level. The Laurentian Highland is also called The Height-of-Land.

6. The Pacific Highland includes the Rocky Mountains and the elevated Plateau lying between these mountains on the one side, and the Sierra Nevada and Cascade Ranges on the other. It extends from the Isthmus of Panama to the Arctic Ocean.

The Pacific Highland—Mt. Sultan, a peak of the Rocky Mountains in Colorado.

NORTH
AMERICA
PHYSICAL MAP
SCALE OF MILES
0 100 500 1000
IOWA
55045
Sq.Miles
Plains
Low land
Green
Dark Green
Low Plateau
High Plateau
Buff
Dark Buff
Longitude
from
Washington
West
East
40
30
20
10
0
10
UNEXPLORED
REGION
ASIA
ARCTIC OCEAN
Herald I.
Whale
Bering Strait
BERING SEA
PT. BARROW
Walrus
West Longitude from Greenwich
C. ALEXANDER
LINCOLN SEA
C. WASHINGTON
GRANT LAND
WASHINGTON LAND
Humboldt Glacier
Musk Ox
GREENLAND
Jan Mayen I.
ICELAND
Polar Bear
Seafowl
Arctic Circle
Whale
BAFFIN BAY
Eider duck
Disco I.
Davis Strait
Berries,
Moss, Lichens
Seal
C. FAREWELL
Limit of Arctic Ice
Banks Strait
Melville Sound
PRINCE ALBERT LAND
VICTORIA LAND
COCKBURN LAND
Gulf of Boothia
NORTH DEVON
Lancaster Sound
Fox Channel
SOUTHAMPTON I.
Hudson Strait
C. CHUDLEIGH
LABRADOR CURRENT
Mackerel
LABRADOR
PENINSULA
HUDSON BAY
James Bay
Furs
Strait of Belle Isle
NEWFOUNDLAND
C. RACE
Cod
GRAND BANK
Gulf of St. Lawrence
Herring
Sable I.
C. SABLE
CAPE COD
Long I.
GULF STREAM
C. HATTERAS
BERMUDA ISLES
Arrow-root
Vegetables
ATLANTIC OCEAN
POLAR HIGHLAND
Moss
Great Bear Lake
Barley
Great Slave L.
Wheat
Athabasca L.
Oats
Flax
Beaver
Potatoes
GREAT CENTRAL PLAIN
Nelson R.
Furs
Saskatchewan R.
Manitoba L.
Assiniboine R.
Red R.
Missouri R.
Platte R.
Kansas R.
Arkansas R.
Red R.
Maize
Rye
MISSISSIPPI
L. Superior
L. Michigan
L. Huron
L. Erie
L. Ontario
Pine
Sugar-Maple, Hemlock, Oak
Hemp
Wheat
Ohio R.
ALLEGHENY
CUMBERLAND
APPALACHIAN
ATLANTIC COASTAL PLAIN
GULF COASTAL PLAIN
Oranges
Bananas
Sponge
GULF OF MEXICO
C. SABLE
BAHAMA ISLANDS
Sponge, Coral
Green Turtle
SALT
WEST INDIA ISLANDS
Sugar,
Tobacco
Rum,
JAMAICA
Bananas
Coffee
PORTO RICO
Sugar, SULPHUR
Trinidad I.
Pitch
CARIBBEAN SEA
C. GRACIAS A DIOS
Bay of Honduras
Mahogany
CENTRAL AMERICA
Coffee,
Cacao
Coffee
Bay of Panama
Orinoco R.
SOUTH AMERICA
Gulf of Tehuantepec
Isthmus of Tehuantepec
MEXICAN COAST CURRENT
EQUATORIAL COUNTER CURRENT
PACIFIC OCEAN
NORTH PACIFIC CURRENT
Bristol Bay
Norton Sound
Kadiak I.
Otter
Walrus
Cod
QUEEN CHARLOTTE IS.
VANCOUVER I.
Str. of Juan de Fuca
C. FLATTERY
C. MENDOCINO
GREAT BASIN
PT. CONCEPTION
Gulf of California
Balleuas B.
C. SAN LUCAS
TROPIC OF CANCER

The Pacific Slope from Berkeley, showing the City of San Francisco and the Golden Gate.

Between this Highland and the Pacific Ocean lies the **Pacific Slope.**

7. Rivers and Lakes.—North America is abundantly watered. Its rivers and lakes are among the largest in the world. A very large portion of all the fresh water on the globe is contained in its lakes.

The **Mississippi** and its numerous tributaries traverse the southern slope of the Great Central Plain. The **Missouri** and the Lower Mississippi together form one of the longest watercourses in the world. Its length is more than 4,000 miles.

The **St. Lawrence** drains the Great Lakes and flows into the Gulf of St. Lawrence. The rivers of the eastern slope of the Appalachian Mountains all enter the Atlantic Ocean or the Gulf of Mexico.

Those of the Pacific Highland are the **Yukon,** which flows into Bering Sea and is navigable for 1,500 miles, the **Columbia** and the **Colorado** entering the Pacific, and the **Rio Grande,** which flows into the Gulf of Mexico.

The **Mackenzie,** the **Saskatchewan,** and the **Nelson** drain the northern portion of the Central Plain and flow into the Arctic Ocean or into Hudson Bay.

The waters of the Great Lakes pass from Lake Erie to Lake Ontario through the Niagara River, and descend 156 feet at one leap, forming the grandest cataract in the world.

Review Topics.—Extent of North America, north and south. What gives this continent its great diversity of climate and variety of production? How is the surface divided? Describe the Atlantic Plain. The Appalachian Highland. The Great Central Plain. By what is it divided? What is said of the two slopes? Describe the Laurentian Highland. The Pacific Highland. The Pacific Slope. What is said of the rivers and lakes of North America? Of the Mississippi and its branches? The St. Lawrence? The rivers of the Appalachian Mountains? Pacific Plateau? Arctic Slope?

XX. CLIMATE, VEGETATION, AND INHABITANTS.

1. Climate and Vegetation.—The climate of North America is varied. The greater part of the continent is in the Temperate Zone. This portion is well watered, and contains extensive forests, grassy plains, and abundant vegetation.

The extreme **northern** part is cold and almost uninhabitable. It is marked by a dwarfed and scanty vegetation, which, on the Arctic shores, consists of nothing but mosses and lichens.

The **southern part** lies near or in the Torrid Zone. It has a tropical climate, an abundant rainfall, and luxuriant vegetation. Cotton, coffee, sugar cane, and tobacco are here extensively cultivated, and the banana, pineapple, orange, and lemon are found in perfection.

2. Advantages of Position.—North America lies between the two great oceans; it has the Atlantic on the east and the Pacific on the west. Its harbors on the Pacific are midway beween the western shores of Europe and the eastern shores of Asia.

With its double sea front, numerous harbors, central position, narrow isthmus, with quick transit across it, North America is well situated for trade with both Europe and Asia.

3. Discovery.—America was discovered by Christopher Columbus in 1492. It was named America after Americus Vespucius, a Florentine and a contemporary of Columbus.

The first land discovered was **Watling Island,** one of the small islands of the West Indies. Other islands of the group were discovered by Columbus, and he left some of his men on the island of Haiti. Finally, on his third voyage, he discovered the continent itself. Columbus thought that these islands were the **East Indies,** but when

MAP STUDIES.—What country occupies the northern part of North America? What country north east of British America? South? What country south of the United States? South east of Mexico?

Danish America (belongs to Denmark).—Of what does Danish America consist? Name the capital of Iceland. What towns lie within the Arctic Circle? Where is Cape North? Cape Farewell?

British America.—What is the principal division of British America? What island and province form the other division? What mountain range in the western part? What lakes are drained by the Mackenzie River? The Nelson? What lakes on the southern border of the Dominion of Canada? Where is Cape Race? Cape Sable? Bay of Fundy? Grand Bank? Two islands on the Pacific coast? Where is the Magnetic Pole? At this pole the magnetic needle points towards the center of the earth. What is the capital of the Dominion? What Cities on the St. Lawrence? Where is Halifax?

United States.—Two capes on the east? What mountains near the west coast? Where are the Appalachian Mts.? What three bays on the eastern coast? Where is Boston? New York? Philadelphia? Washington? What city on the Ohio? On Lake Michigan? What city near the mouth of the Missouri? Near the mouth of the Mississippi? On the Pacific coast?

Mexico.—What river between Mexico and the United States? What gulf and peninsula on the Pacific coast? What is the principal mountain range? Name one of its volcanoes. What is the capital? What city on the Bay of Campeche?

Central America.—What sea on the east? What ocean on the west? What lake in the southern part? What are the chief cities?

West Indies.—Name the four largest islands of this group. Where is Havana? Port-au-Prince? San Domingo? Kingston? San Juan? Where are the Bahama Islands? The Bermudas?

NORTH AMERICA
POLITICAL MAP

SCALE OF MILES
0 100 500 1000

IOWA
55045
Sq. Miles

For every 15 degrees of longitude the difference of time is one hour.

Longitude from Washington: 40 West, 30 West, 20 West, 10 West, 0, 10 East

TIME A.M. when it is Noon on the Meridian of Greenwich, and 6.52 A.M. at Washington.

it was found that they were not, they were called the **West Indies.** Spanish colonies were promptly established in the New World. Cuba and the other Spanish-American republics grew out of these.

4. Inhabitants.—The continent is at present occupied chiefly by Caucasians of various nationalities, and by the descendants of African Negroes.

Both North and South America, with their adjacent islands, were inhabited at the time of their discovery by **Indians,** of whom only the **Peruvians** and the **Aztecs** of Mexico were civilized.

No horses, cows, or other domestic animals were known to the natives, except the hairless dog of Cuba and the llama of Peru.

The Indians roamed over the country from one hunting ground to another, living in wigwams. They rarely cultivated the soil. Some of their tribes are now partially civilized.

The **Arctic** portions of the continent are still in possession of the native **Eskimos,** who live in snow huts, clothe themselves in the skins of animals, and feed upon fish and the flesh of the bear, seal, and walrus.

5. Political Divisions.—Greenland and Iceland belong to Denmark; The Dominion of Canada, Labrador, and Newfoundland belong to Great Britain; The United States (including Alaska and Porto Rico), Mexico, the Central American States, Cuba, Haiti, and San Domingo are independent republics; other West Indian islands, the Bahamas, and the Bermudas, belong to European nations.

Review Topics.—In what zone is a large part of North America? Describe the vegetation of the extreme northern portion. Of the southern portion. Products of each. How is North America located? Commercial importance. When and by whom was America discovered? Why so called? Account for the name West Indies. Who are the present inhabitants of the continent? Describe the Indians. Eskimos. Name the political divisions of North America.

THE UNITED STATES.

XXI. RANK AND PHYSICAL FEATURES.

1. Position and Rank.—The United States occupies the central and most fertile part of North America. It ranks as one of the greatest powers of the world, and stands first in agriculture, manufactures, and wealth.

2. Extent.—The country extends from the Atlantic to the Pacific Ocean, and from the Great Lakes on the north to the Gulf of Mexico on the south. The distance from ocean to ocean, in a direct line across the country, is 2,100 miles in the narrowest, and 2,800 in the broadest part, and its greatest breadth from north to south is nearly 1,700 miles.

View of the White Mts., showing the Presidential Range. The high peak in the center is Mt. Washington. The large building is a summer hotel.

The area of the United States, including Alaska and the outlying islands, is 3,792,886 square miles.

3. Surface.—The surface of the United States consists of three great natural divisions: I. The **Atlantic Plain** and **Appalachian Highland.** II. The **Valley** of the **Mississippi.** III. The **Pacific Highland** and **Slope.**

Mount Pisgah, viewed from Battery Park, Asheville, N. C. This section lies in the plateau region west of the Blue Ridge range. The Broad river has cut a wide valley through the plateau.

THE ATLANTIC PLAIN AND APPALACHIAN HIGHLAND.

4. The Atlantic Plain lies between the sea and the Appalachian Mountains.

It consists of a belt of lowland called the **Coastal Plain,** and an upland region called the **Piedmont.**

The **Coastal Plain** is narrow at the north, but widens toward the south, where it is from 200 to 300 miles in width.

West of this low plain lies the **Piedmont** region, or hill country, which gradually increases in elevation until we reach the foot of the mountains.

5. The Appalachian Highland.—Beyond this hill country are the mountain ranges forming the Appalachian system. They lie nearly parallel to one another, and extend in a northeast and southwest direction, from the St. Lawrence nearly to the Gulf of Mexico.

The most prominent of these ranges are the **White Mountains,** the **Green Mountains,** the **Adirondacks,** the **Blue Ridge,** and the **Allegheny Mountains.**

Here and there are **elevations** of 6,000 feet, but the average height is not more than 2,000 or 3,000 feet. With few exceptions the Appalachians are forest-clad to their summits.

6. The Climate of this division varies with the latitude. In the northern portion there are long and severe winters; in the southern, flowers are blooming all the year round. The entire region has a moderate but sufficient rainfall.

7. The Products of the Atlantic and Gulf Plains correspond with the climate. When these sections were first settled by white men, they were covered with forests.

The **northern section** produces oats, corn, hay, and potatoes.

In the **central portion** the yield of hardy fruits and grains is abundant.

In the **southern section** we find cotton and rice, indicating a semi-tropical climate, while in large areas of Florida the orange and lemon, banana, and guava flourish.

8. The Natural Advantages of the Atlantic Plain and Appalachian Highland are very great.

The deposits of coal, iron, and petroleum are enormous.
Numerous rivers rise in the highlands, furnishing water-power for the manufacturer and highways for commerce in the Coastal Plain.
The **coast line** is much indented, forming excellent harbors.

The Mississippi River and its flood-plain at Winona, Minn., looking up the river. Notice the drawbridge which is drawn to permit steamboats to pass and the jetty on the left-hand side to deepen the channel and prevent the banks from being washed away. Above notice the several branches, all of which are a part of the river. The opposite shore is Wisconsin.

THE VALLEY OF THE MISSISSIPPI.

9. Valley of the Mississippi.—Crossing the wooded heights of the Appalachian ranges, we enter a vast shallow basin called the Valley of the Mississippi. It extends from the Appalachians to the Rocky Mountains, and from the Gulf of Mexico to the **Height of Land.** It occupies nearly one-half the area of the United States.

If we look at the map we shall see that the Mississippi receives the waters of large rivers, such as the **Ohio** and the **Tennessee** on the east, and the **Missouri,** the **Red,** and the **Arkansas** on the west. This clearly shows that the lands on either side of the river form the sloping sides of a great valley.

A large portion of the upper Mississippi Valley consists of **prairies.** Some of them are rolling, others as level as the sea. Most of them are treeless. These prairies were once covered by a **great shallow sea;** the fine soil was washed down from the mountains and deposited as sediment on the sea-bottom. A slow uplift of the continent afterward left this region dry land.

Before the prairies were cultivated they were covered in springtime and summer with grass and flowers. Boundless fields of wheat and corn now occupy large portions of them.

Westward of the Missouri and the 98th meridian are the **Great Plains,** a plateau extending to the Rocky Mountains. Their soil is covered, when in a natural condition, with nutritious grasses on which many thousand hogs and cattle feed. These plains are the great **grazing region** of the United States.

10. Climate.—The northern section has a temperate climate, with hot summers and cold winters. The climate of the southern portion is semi-tropical.

The soil is of great depth and fertility. It is composed for the most part of fine sediment left by the waters that once overflowed the valley; but in the northern half there is much coarser material left by the glacier that once overspread the northern part of the continent.

The climate of the Great Plains is remarkably dry. Agriculture depends, in many areas, upon irrigation; that is, distributing water over the fields by means of channels leading from reservoirs.

11. The Products of the Mississippi Valley are similar to those of the Atlantic Slope in corresponding latitudes. The leading products are cotton, sugar, hay, grain, tobacco, lumber, and minerals. The Mississippi Valley is the chief **agricultural region** of the country.

12. The Natural Advantages of this region are unsurpassed.

Its **soil** is unrivalled in depth and fertility.

Its **grazing lands** are among the most extensive in the world.

It contains some of the most valuable **timber lands** in the country.

The **Great Lakes** are on the northern borders of this region. They are really inland fresh-water seas. On their waters many thousands of vessels carry on an active internal commerce.

The **Mississippi** and its **tributaries** drain the entire valley, and furnish water-routes whereby the products of one portion of this region may readily be transported to another. The lumber and wheat of Minnesota and Wisconsin are carried upon the Mississippi down to New Orleans, a distance of more than 2,000 miles; while the sugar, rice, etc., of the Gulf States may be transported upon the same waters to the States far away to the north.

THE PACIFIC HIGHLAND AND SLOPE.

13. The Pacific Highland embraces the **Rocky Mountains**

On the Great Plains. Scene on a Texas ranch. The cowboys have just roped a steer in order that they may examine the brand, or mark. Each ranch owner has his own brand.

and the **Sierra Nevada** and **Cascade ranges,** with the great elevated **plateau** lying between them.

The Rocky Mountains, with their snow-capped peaks, border the plateau on the east. They form the loftiest water-shed in the United States. Here are found the head waters of the longest rivers that flow eastward into the Mississippi, and westward into the Pacific.

The Plateau Region has an average elevation of 5,000 feet above the sea level, and is from 300 to 800 miles in breadth.

It is traversed by numerous ridges and mountain chains and is naturally divided into three regions, viz., the **Plain of the Columbia** on the north, the **Plateau of the Colorado** on the south, and between these the **Great Basin,** in which is the Great Salt Lake.

The Sierra Nevada and **Cascade ranges** form the western

MAP STUDIES

PHYSICAL UNITED STATES.

Surface.—Which half of the United States contains the greater amount of highland? What highland traverses the eastern half? What region between this highland and the ocean? What great valley between the eastern and western highlands? Where is the "prairie" region? What plains form part of the western slope of the Mississippi Valley? What are the lowlands bordering the Gulf of Mexico called? How far north do these extend? Where are the Rocky Mountains? What three ranges near the Pacific? Where is the Great Basin? What great salt lake in this region? *It is salt because it has no outlet. The water of all lakes and rivers contains some salt. When a lake has no outlet, its waters escape by evaporation only. The salt is left behind, and more and more is continually added by the inflowing rivers.* Between what mountain ranges is the most extensive lowland on the Pacific Slope? Of what State does this lowland form part?

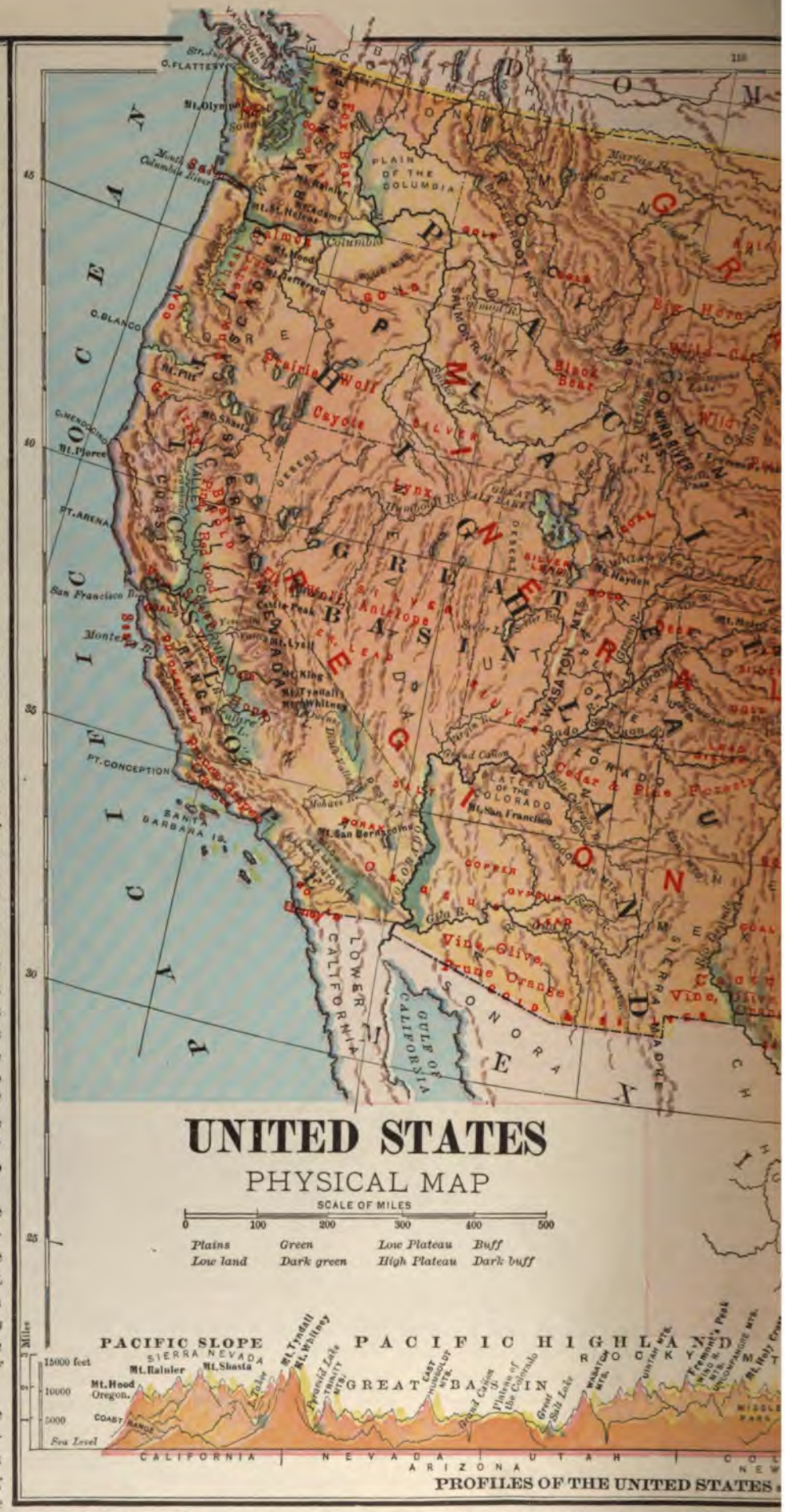
Rivers and Lakes.—Name the most important river of the United States. What is its chief tributary? *Steamers ascend the Mississippi to St. Paul, 2,200 miles from its mouth. The Missouri is navigable nearly to the "Great Falls," about 4,000 miles from the mouth of the Mississippi. This is a greater distance than from New York to Liverpool.* What is the chief eastern tributary of the Mississippi? To what States does it afford water communication? *The rivers of the Atlantic slope are navigable generally through the dark-green or lowland belt.* Where is the Yellowstone river? The Platte? Arkansas? Red? Rio Grande? What River enters the Gulf of California? *It is famed for the cañons through which it flows. They are gorges through the rock, some of which are 6,000 feet deep.* Name the two most important rivers of California. What river breaks through the Cascade Range and enters the Pacific Ocean? Name the Great Lakes. Which is the largest? On the map find a State nearly equal to it in area? Which is the smallest of the lakes? On the map find a State that we compare in size to Ontario? Which of the Great Lakes is wholly within the United States? To what country do the others partly belong?

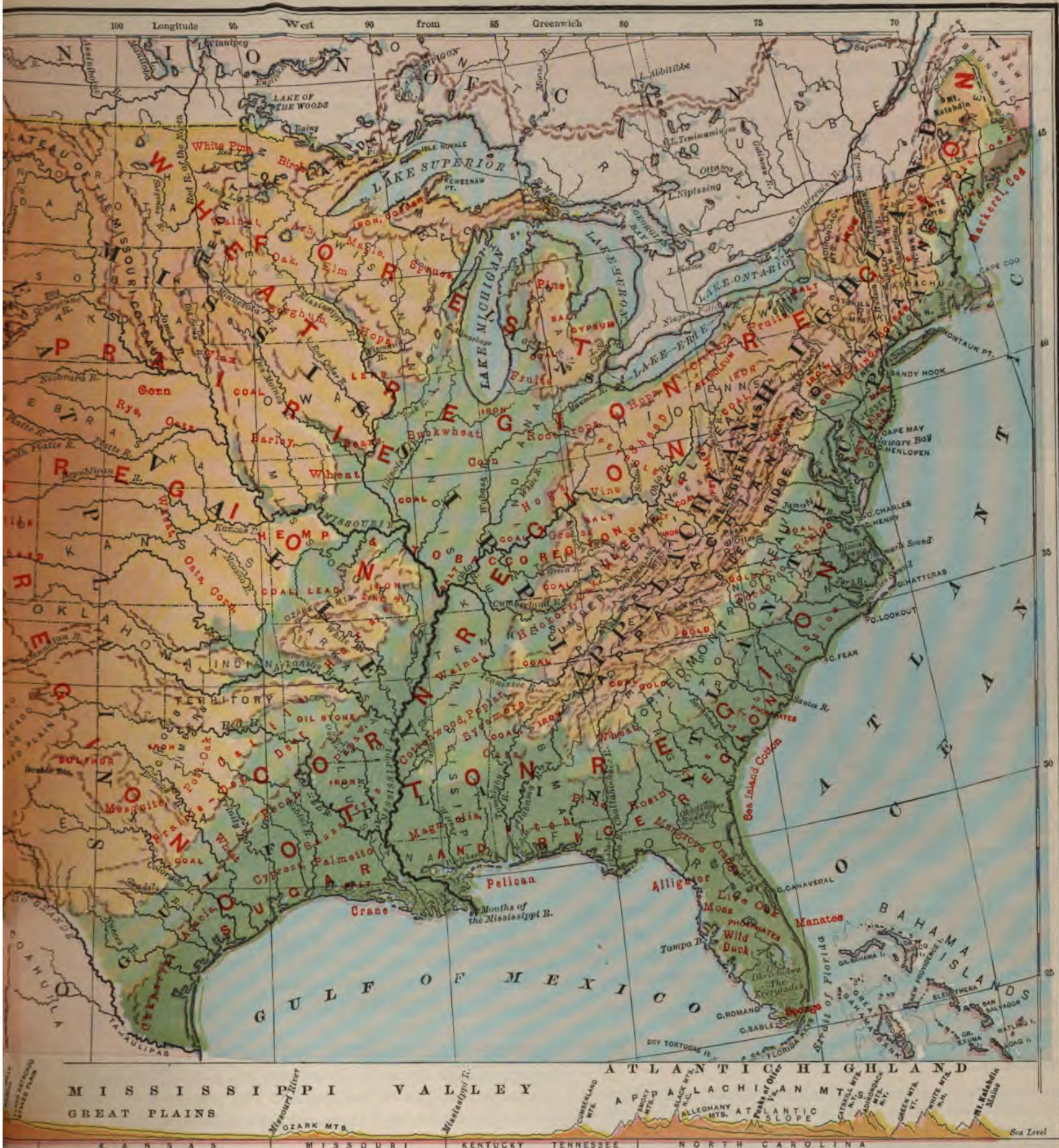
Climate.—Between what parallels of latitude does the United States lie? What are the prevailing winds? In what part of the country are the west winds bearers of rain? Why? From what directions do the winds come that bring rain on the Atlantic coast? Explain this. *The winds that blow from the Gulf of Mexico bring moisture to the Gulf Slope. Hurricanes from the Gulf often extend as far north as New England.*

In what zone does the United States lie? The Tropic of Cancer is in lat. 23½° N. How far distant from the tropical regions is the southern point of Florida? Land winds in winter being cold, and sea winds warm, which must have the milder winter weather, the northeastern corner of the United States or the northwestern?

Minerals.—What part of the country is the great mineral region? What are the principal minerals found here? What are the leading mineral products of the Atlantic Highlands? Name those found on the shores of Lake Superior. In which half of the United States i abundant? In what parts of the country is salt obtained? In of the Mississippi Valley do you find iron? Coal? Lea leum?

Vegetation.—Name the grains raised in the Mississippi V





BETWEEN THE PACIFIC OCEAN AND THE ATLANTIC OCEAN. Note. The Scale of Height is 40 times the Scale of length.

what part of the valley is the great "wheat belt"? The "corn belt"? The "hemp and tobacco region"? What portion of the country does the "cotton belt" include? The "sugar and rice region"? In what portion of the lowland is the orange raised? What are the agricultural products of the valleys of the Pacific Slope? What is the most important?

Which half of the United States most abounds in forests? Where are the great "forest regions" found? Where is the "forest region" of the Pacific Slope? From what part of the Atlantic Slope do we get pitch, rosin, tar, and turpentine? Where does the "live oak" grow? In which part of the country is the great "grazing region"?

boundary of the Plateau. They are really one chain, following the coast at a distance of from 100 to 150 miles.

Many of the peaks of the **Rocky Mountains** and the **Sierra Nevada** rise to the height of over 14,000 feet.

14. Climate.—The climate of the **Pacific Highland** is marked by extreme dryness. It has but little rain, except on the mountains, which are in the path of the westerly winds.

Owing to the absence of moisture, the air is rapidly heated and rapidly cooled. Often the temperature at noon will be 70° or 80°, and at sunrise below freezing-point.

On the Pacific Highland—The Navajo District, showing the effect of the dry climate on vegetation.

15. Resources.—This is one of the great regions of the world for the production of the precious metals. In **gold** it ranks next to Australia; in **silver** it is second only to Mexico.

The only natural vegetation of parts of the Plateau Region are the **sage brush** in the north, and the **cactus** in the south.

16. The Pacific Slope.—Leaving the **Plateau Region** and crossing the Sierra Nevada and Cascade ranges, we find ourselves upon the Pacific Slope, which extends from the summits of these mountains to the Pacific Ocean.

Pasadena Valley, California; Mount Lowe from Monk's Hill.

It includes the low valleys of **California, Oregon,** and **Washington,** and the **Cascade Mountains** and the **Coast Range** that borders the Pacific.

17. The Climate of the Pacific Slope, owing to the prevailing winds from the sea, is much milder than that of corresponding latitudes on the Atlantic Slope. The summers are cooler, and the winters so mild that many visitors spend the winter there.

The rains occur during the winter, which is known as the **rainy season**; the summer is called the **dry season.**

18. The Products and Resources of the Pacific Slope are extraordinary.

The mines of **quicksilver, gold,** and **petroleum** are of great value. Vegetables and fruit attain a size that is almost incredible; and the yield of **wheat** is sometimes 50 bushels to the acre. Magnificent **forests** cover the mountain slopes. Trees are found measuring 40 feet in diameter. Facing the Asiatic continent, moreover, the Pacific Slope enjoys unrivalled advantages for carrying on **commerce** with the populous nations of **China** and **Japan.**

Review Topics.—Location and rank of the United States. What is the greatest distance from east to west? The least? How is the surface divided? Describe each natural division—surface, climate, products. What are the natural advantages of the Atlantic Plain? Describe the Mississippi Valley; extent; prairies; plains. Climate of the northern portion; southern. The plains. The products. How can Minnesota and the Gulf State exchange products? Describe the Pacific Highland. The Rocky Mountains. The Plateau region. Width. How divided by mountains? The Sierra Nevadas. Height of peaks. The climate. The mineral wealth. The natural products. Describe the Pacific Slope. Compare its climate with that of the Atlantic Slope. Describe the summers and winters. The mines. Fruits and vegetables. Wheat. Forests. Commercial advantages.

XXII. STATES.—POPULATION.

1. The United States consists of forty-five states, one district, six territories, and the islands annexed in 1898.

2. Grouping of States.—The following is a convenient grouping of the states and territories.

New England States.

MAINE,	VERMONT,	RHODE ISLAND,
NEW HAMPSHIRE,	MASSACHUSETTS,	CONNECTICUT.

Middle Atlantic States.

NEW YORK,	DELAWARE,	WEST VIRGINIA,
NEW JERSEY,	MARYLAND,	(*District of Columbia*)
PENNSYLVANIA,	VIRGINIA,	

Southern States.

NORTH CAROLINA,	ALABAMA,	ARKANSAS,
SOUTH CAROLINA,	MISSISSIPPI,	TENNESSEE,
GEORGIA,	LOUISIANA,	*Indian Territory*,
FLORIDA,	TEXAS,	*Oklahoma Territory.*

Central States.

KENTUCKY,	KANSAS,	WISCONSIN,
OHIO,	IOWA,	MINNESOTA,
INDIANA,	NEBRASKA,	NORTH DAKOTA,
ILLINOIS,	MICHIGAN,	SOUTH DAKOTA.
MISSOURI,		

Rocky Mountain and Pacific States.

COLORADO,	NEVADA,	CALIFORNIA.
MONTANA,	IDAHO,	OREGON,
WYOMING,	UTAH,	WASHINGTON,
New Mexico Territory,	*Arizona Territory*,	*Alaska Territory.*

Island Regions.—*Hawaii*, *the Philippines*, *Porto Rico*, *Guam*, one of the Ladrones, *Wake Island*, and *Tutuila* and *Manua*, of the Samoan group.

The States may also be grouped as Atlantic, Gulf, Inland, **Lake,** and Pacific States. We sometimes speak of the "Valley States," meaning those in the Mississippi Valley; and the "Cotton States," meaning those in which cotton is the principal product.

3. Early Colonies.—The first English colony was established at **Jamestown,** Virginia, in 1607. In 1620 the Pilgrims founded **Plymouth Colony** in Massachusetts. Soon afterward **Maryland** was settled by English Roman Catholics, and **Pennsylvania** by Quakers.

The Dutch had settlements in New York, the **Swedes** in New Jersey, and the **Danes** in Delaware; but about 1664 these colonies became subject to the English, who proceeded to establish and acquire others, until their colonies numbered thirteen.

These were Virginia, Maryland, Georgia, North Carolina, South Carolina, Delaware, Pennsylvania, New Jersey, New York, **Massachusetts,** Rhode Island, New Hampshire, and Connecticut. **They are often** called the **"Old Thirteen."**

In 1776 they declared themselves **free, sovereign,** and **independent States,** and after a seven years' war their **independence was** acknowledged by Great Britain. They adopted **a constitution** in 1789, and established the government of **The United States of America.**

4. Acquisition of Territory.—Additional territory has been acquired by the United States, mainly by purchase. By these additions the area of the country has been increased fourfold.

In 1803 **Louisiana,** including the western half of the Mississippi Valley, was purchased from the French.

In 1819, **Florida,** which had been settled at St. Augustine by Spaniards in 1565, was purchased from Spain.

In 1845 **Texas,** having previously revolted from Mexico and established her independence, was annexed to the United States.

In 1848 **California,** with the territory lying between it and the Rocky Mountains, was ceded to the United States by Mexico. In 1853 the southern portions of **Arizona** and **New Mexico** were purchased from Mexico.

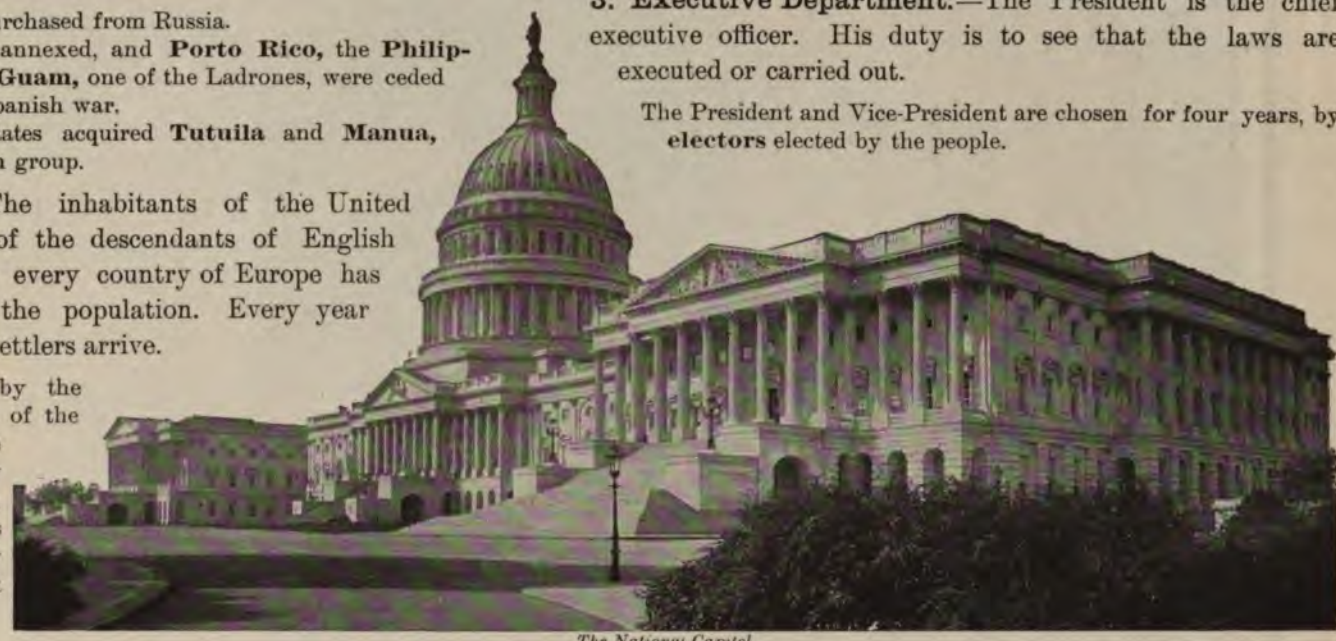
In 1867 **Alaska** was purchased from Russia.

In 1898 **Hawaii** was annexed, and **Porto Rico,** the **Philippine Islands,** and **Guam,** one of the Ladrones, were ceded by Spain after the Spanish war.

In 1900 the United States acquired **Tutuila** and **Manua,** islands of the Samoan group.

5. Inhabitants.—The inhabitants of the United States consist largely of the descendants of English colonists. But nearly every country of Europe has contributed to swell the population. Every year large numbers of new settlers arrive.

A census is taken by the general government of the United States once every ten years. By the census of 1890, the population was about 63,000,000; by the census of 1900 it was 76,303,387.*



The National Capitol.

6. The largest cities in the United States are:

More than 4,000,000 inhabitants—New York City.

More than 1,000,000—Chicago and Philadelphia.

More than 500,000—St. Louis, Boston, and Baltimore.

More than 300,000—Cleveland, Buffalo, San Francisco, Cincinnati, Pittsburg, Milwaukee, Detroit, Washington, and New Orleans.

More than 200,000—Newark, Jersey City, Louisville, and Minneapolis.

More than 100,000—Providence, Indianapolis, Kansas City (Mo.), St. Paul, Rochester, Denver, Toledo, Columbus, Worcester, Syracuse, New Haven, Paterson, Fall River, St. Joseph, Omaha, Los Angeles, Memphis, Scranton, and Seattle.

Review Topics.—How many States and Territories in the United States? Divisions. Which are the "Valley States"? The "Cotton States"? The first English colony. The Plymouth Colony. The Roman Catholics. The Quakers. The Dutch. The Swedes. The Danes. What nation acquired possession of the Dutch, Swedish, and Danish colonies? What were the "Old Thirteen"? What occurred in 1776? How was Louisiana acquired? Florida? Texas? California? Arizona? Alaska? Hawaii? Porto Rico? The Philippine Islands? What was the population in 1890? In 1900? What city has more than 4,000,000 inhabitants? Which had more than 1,000,000? Between 200,000 and 500,000? Between 100,000 and 200,000?

XXIII. GOVERNMENT.

1. Government.—The Departments of the United States Government are three: the **Legislative, Executive,** and **Judicial.**

2. The Legislative Department, or **Congress,** consists of the **Senate** and **House of Representatives.**

The **Senate** is composed of two Senators from each State, chosen by the Legislature, to serve six years.

The Vice-President is the presiding officer of the Senate.

The **House of Representatives** consists of members chosen by the people to serve two years. Each State sends one representative for every 193,291 inhabitants.

One of the members of the House of Representatives is elected to preside at its meetings, and is called the **Speaker.**

The **Laws** are made by Congress, with the approval of the President.

If the President does not approve of any bill passed by Congress, he may veto (refuse to sign) it, but it may still become a law by a two-thirds' vote of each House.

Congress holds its sessions in the Capitol at Washington.

3. Executive Department.—The President is the chief executive officer. His duty is to see that the laws are executed or carried out.

The President and Vice-President are chosen for four years, by **electors** elected by the people.

4. The Judicial Department comprises the federal courts. The **Supreme Court** consists of a **Chief-Justice** and eight **Associate Justices,** appointed by the President, with the consent of the Senate.

5. State Government.—Each State has a government similar to that of the United States.

It has a **Legislature** consisting of two houses, a **governor** elected by the people, and a **supreme court.** Neither Congress nor the legislature of a State has the right to make any law contrary to the Constitution and laws of the United States.

Review Topics.—The departments of the Government. The Legislature. Who presides in the Senate? Of what does the House of Representatives consist? Presiding officer. What body makes the laws? The President's veto. Who is the chief executive officer of the United States? Term of office. How chosen? The Supreme Court. How is each State governed?

XXIV. INDUSTRIES.

1. Manufacturing now excels all other industries of the United States in the value of its products.

Our great **factories** are chiefly in the cities east of the Mississippi and north of the Ohio and Potomac rivers.

The **ten leading manufacturing industries** are as follows:

1. Iron and Steel goods.
2. Machinery and Engines.
3. Preserved Meats.
4. Lumber Products.
5. Textile Goods.
6. Clothing.
7. Flour and Meal.
8. Paper, Books, and Newspapers.
9. Leather and Leather Goods.
10. Cars and Wagons.

*Not including our island possessions, except Hawaii.

POLITICAL UNITED STATES.

MAP STUDIES.—What parallel forms a large part of the northern boundary line? What strait forms the western termination of the boundary? Starting eastward from the Lake of the Woods, trace the boundary to the Atlantic. What gulf and river form parts of southern boundary? What country forms the rest? What ocean On the west?

What States border on the Atlantic? On the Gulf? The Great Lakes? What partly bounded by the Mississi by the Missouri? Partly bordered by the Ohio? The large smallest?

Which States are most favorably situated for commerce

of the Atlantic ports are the nearest to Europe? What natural of transportation do the States of the Mississippi Valley possess? h how many degrees of latitude does the Mississippi flow? ddition to the rivers and lakes, what other means of transporta- s the United States? By what water routes may a farmer in send grain to the Atlantic seaboard? ere is Cape Cod? Sandy Hook? Cape May? Hatteras? Cape Sable?

Where is Washington? New York? Boston? Brooklyn? Baltimore? What great city on the Delaware? Where is Chicago? What large city near the mouth of the Missouri? Where is Cincinnati? Louisville? What city near the mouth of the Mississippi? Besides New Orleans, what are the two great Gulf ports? What is the great port on the Pacific coast? Where is Savannah? Norfolk? Each of the Portlands? Buffalo? Detroit? Milwaukee?

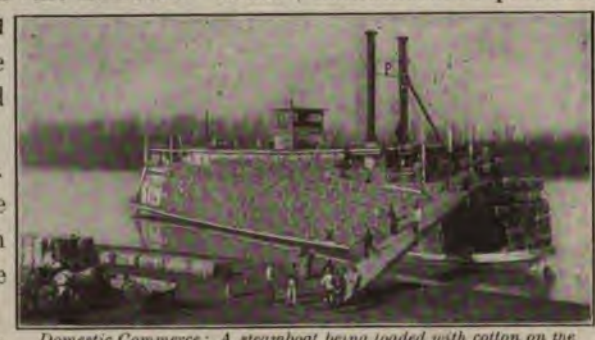
2. Agriculture is the occupation of about one-fourth the people of the United States, and its products rank next to manufactures in value. The leading products north of the parallel of 36° north are corn, wheat, oats, rye, barley, hay, potatoes, flax, hemp, and tobacco.

South of this parallel is the region of cotton, sugar, and rice.

Domestic Commerce: Boats loaded with grain on the canal at Williamsport, Maryland. Notice the Potomac River and railroad tracks.

3. Grazing is the third important industry. In Texas and the States of the Great Plains, cattle and sheep are raised in vast numbers. Other grazing products are the **pork** and **wool** of the Central States, the wool of the Pacific States, and the **milk, butter,** and **cheese** of the Middle Atlantic States.

4. Mining is a growing industry. The **precious metals** and **copper** are found mainly in the Rocky Mountain and Pacific States; **coal** and **iron** in the Appalachian and central regions.



Domestic Commerce: A steamboat being loaded with cotton on the Yazoo River, one of the tributaries of the Mississippi.

5. Lumbering is a greater industry in the United States than in any other country. It produces over five hundred million dollars annually. The chief **forest regions** are in the Pacific States, the Lake States, and in the Southern States.

6. The Fishing interests of the country are important. They engage the attention mainly of **New England,** the **Chesapeake Bay States,** the **Lake States,** and the **Pacific States.**

7. Domestic Commerce.—The products and industries of the different sections of the country differ widely. This gives rise to a large and growing domestic commerce. This commerce is greatly aided by excellent transportation facilities.

The **Mississippi,** with its 33 navigable tributaries, affords a cheap waterway for trade between the different States of the Mississippi Valley and connects them with the Gulf. The Mississippi is now connected with the Great Lakes by the Michigan and Illinois Canal.

The **Great Lakes,** with the Welland and other Canadian canals and the St. Lawrence, form a second great water route.

The **Erie Canal** connects the Great Lakes and the Hudson River, and forms a third water route.

By means of these and a vast system of railroads the different parts of the country readily exchange products.

8. The Foreign Commerce of the United States is very large, and is steadily growing. We import about $1,000,000,000 worth of merchandise, and export over $1,500,000,000. This means that we produce a great deal more of some things than we need for our own use.

The value of our **imports** in 1899 was only fifty million dollars more than in 1889, and the value of our **exports** was nearly six hundred million dollars more than in 1889.

Our leading **exports** are cotton, breadstuffs, petroleum, meat, provisions, tobacco, and iron and steel ware. The demand for our manufactured products is steadily increasing.

Our **largest customers** are Great Britain, Germany, France, the West Indies, Holland, and Canada.

By far the greater part of our exports goes to Great Britain. A very important trade is carried on with the West Indies and South America in flour, lumber, and manufactures. Germany buys much of our petroleum.

The leading **imports** are tin, iron, and dry goods from England; wines, dry goods, and silks from France; teas and raw silk from China and Japan; coffee from Brazil and Java; sugar and fruits from the West Indies; wool from Australia; hides and rubber from South America.

Domestic Commerce: A whaleback steamer passing from Lake Superior to Lake Huron through the "Soo" Canal.

Review Topics.—What are the five most important industries of the United States? Where is each carried on? What is said of grazing? Mining? Manufacturing? Fishing? Domestic Commerce? The great commercial water routes? The Mississippi trade? The Erie Canal? The Canadian canals? Describe other means of transportation. The foreign commerce of the United States. Exports. Imports.

MAP STUDIES.—Between what parallels do the New England States lie? Which is the largest? The smallest?

Maine.—What is the general slope of Maine? What lakes have outlets to the sea through the Penobscot? Kennebec? Androscoggin? The St. John? What large island on the coast? What bays? Cape? What city on Casco Bay? Where is Bangor? Bath? Lewiston? Biddeford? What and where is the capital?

New Hampshire.—What mountains in the northern part of this State? Name the largest lake in this State. Describe the course of the Connecticut River. Where is Concord? Nashua? Manchester? Portsmouth? Dover? What is the capital?

Vermont.—Near what parallel is the northern boundary of this State? What mountains traverse this State from north to south? Through what rivers do the waters of Lake Champlain reach the sea? What lake in the northern part of the State? What rivers in Vermont are tributary to the Connecticut? Montpelier? Rutland? St. Albans? Brattleboro? What is the capital?

Massachusetts.—What part of the State is mountainous? Which are the principal peaks? What part of the State is drained by the Connecticut? By the Merrimac? Name the capes. What bay on the eastern coast? Southern coast? What is the capital? Where is Lowell? Lawrence? Salem? Lynn? Springfield? Worcester? Pittsfield? Fitchburg? Fall River? Taunton? Cambridge? Northampton?

Rhode Island.—What bay in the south-eastern part of the State? What city at its head? What point on the coast? What is the capital? Where is Newport?

Connecticut.—In what direction does the surface slope? What rivers cross the State? Into what do they flow? What and where is the capital? Where is Middletown? New Haven? New London? Waterbury? Meriden? New Britain? Danbury?

SOLAR TIME—When it is Noon on the Meridian of Washington, 12:24 P.M. 12:28 12:32 12:36 12:40

THE NEW ENGLAND STATES

SCALE OF MILES
0 10 20 30 40 50

71° Longitude 70° West from 69° 68° Greenwich 67°

BOSTON AND VICINITY
Scale 5 Miles

Longitude 5° East from 6° Washington 7°

XXV. NEW ENGLAND STATES.

The rocky New England coast at Marblehead, Mass.

State.	Area in Sqr. Miles.	Population, 1900.	Capitals.	Chief Cities and their Population.	
Maine	33,040	694,466	Augusta	Portland	50,145
New Hampshire	9,305	411,588	Concord	Manchester	56,987
Vermont	9,565	343,641	Montpelier	Burlington	18,640
Massachusetts	8,315	2,805,346	Boston	Boston	560,892
Rhode Island	1,250	428,556	Providence	Providence	175,597
Connecticut	4,990	908,420	Hartford	New Haven	108,027

1. Position and Area.—The New England States are situated in the northeastern part of the United States. The six taken together are not as large as Nebraska, and they are less than one-third the size of Texas.

2. Coast.—The coast line of these States, especially that of Maine, has a very jagged appearance, and a number of rocky islets fringe the shores—sure signs that there is no lack of deep water and good harbors.

An **irregular coast** like that of New England is the result of a sinking of a rocky coast. This causes the water to flow up the valleys and the mountain ridges to become capes and headlands. A **regular coast line** on the other hand, like that of the South Atlantic Plain, is a result of a rising of the land. The level ocean bed becomes the coast, and is usually flat and sandy. Good harbors on such coasts are usually at the mouths of rivers.

3. Surface.—The surface of New England is rugged and hilly. These States are traversed from northeast to southwest by mountains which extend from Canada nearly to Long Island Sound. They are a part of the Appalachian System. Name the ranges. The eastern section is an upland broken by a succession of hills, with an occasional solitary mountain rising above the plateau. This is a **Piedmont** section.

The mountains were once higher than they are now, and the Piedmont hills were once mountains, but they were gradually worn away. Some mountains, like Mount Monadnock, were of harder rock, and so were not worn down like the others. Mountains such as [illegible] called **Monadnocks.**

The New England Plateau in Massachusetts, showing the Connecticut river below Mount Holyoke.

Along the southeastern part of Massachusetts is a belt [illegible] lands, the only coastal plain in New England.

The **White Mountains,** after those of North Carolina, are the [illegible] east of the Rocky Mountains. Mount Washington, in New [illegible] shire, is 6,293 feet high; Mount Mitchell, among the Black M[illegible] in North Carolina, is only about 400 feet higher.

4. Lakes and Rivers.—A marked feature of New E[illegible] is the great number of **fresh-water** lakes scattered o[illegible] surface.

These were made by an ancient **glacier** which once overspr[illegible] entire region. As it moved toward the sea it scoured out v[illegible] built dams across them with the rock-waste and bowlders [illegible] dropped in melting. The mass of material left by a melting [illegible] is called a **moraine.** These moraines often dammed up [illegible] and changed their courses, thus forming **waterfalls** and la[illegible] altering the appearance of the country.

The most important rivers are the **Connecticut,** navig[illegible] Hartford; the **Merrimac,** which, with its tributaries, fu[illegible] water-power for more factories than any other river in the [illegible] the **Penobscot,** navigable to Bangor; and the **Kennebec,** navigable to Augusta.

If we consider how close to the sea the hilly Piedmont approaches, we shall understand that the streams which flow thence to the sea must have a great descent, with rapid [illegible] and falls, affording abundance of **water-power.** Thes[illegible] streams have contributed to make New England the leading [illegible] facturing district of the country.

View at Manchester, N. H., showing factories along the Merrimac river.

5. Climate.—The winters of New England, by reason [illegible] latitude, are long and cold; the summers are short and h[illegible]

The nearness of these States to the sea has little effect upon t[illegible] mate, because the prevailing winds are from the land. [illegible] current from the Arctic Ocean flows near the coast, so that [illegible] winds are always raw and chilly.

6. Resources.—The most important **minerals** are the [illegible] of Maine, New Hampshire, and Massachusetts; the slat[illegible] marble of Vermont; and the red sandstone of Conne[illegible] Metallic ores in workable quantity are rare.

The **soil** in the river valleys is fertile, but in the upland [illegible] not well adapted to agriculture.

The numerous rapid rivers, the forests, fisheries, and [illegible] harbors shape the **leading occupations** of this section.

7. Industries.—The inhabitants of New England are [illegible] engaged in manufacturing, commerce, shipbuilding, stone [illegible] rying, and fishing.

Manufactures.—This region is scarcely excelled in the world in the variety and amount of its manufactures.

The leading articles of manufacture are cotton and woolen goods, machinery, hardware, firearms, rubber goods, boots and shoes, silverware, and electrical machines. Small wares, also, such as pins, needles, buttons, and combs, are produced in great variety.

Four steps in the manufacure of shoes at Brockton, Mass.: 1. Cutting the soles.

2. *Cutting the upper.*

A large proportion of the machinery for making textile goods, and much of the woolen, cotton, and leather goods manufactured in the United States are produced in Massachusetts, Rhode Island, and Connecticut.

Commerce.—New England buys a great amount of food for her inhabitants, and also large quantities of raw materials, such as cotton, wool, hides, and rubber, for her many mills and factories. She sells her manufactured articles, which are shipped to all parts of the world. All this makes a large foreign commerce and a very extensive trade with other parts of our own country.

The principal exports are textiles, boots and shoes, other manufactured articles, lumber, granite, and dairy products.

Fisheries.—Boston, Gloucester, and Newburyport are the chief towns engaged in the fisheries; they are all in Massachusetts. Their fishing-grounds for cod and mackerel are, however, largely on the Banks of Newfoundland.

Wool-carding machines at Lawrence, Mass. They straighten the fiber and separate it into long rolls that are next drawn out and twisted into yarn.

8. The Mountains, Lakes, and Seashores of New England are every summer visited by thousands of people, who wish to get away from the city during the hot season.

Review Topics.—Area, capital, and chief city of each New England State. The coast line. What advantage arises from it? Describe the surface of New England. What mountains in the west? The Coastal Plain. What is the loftiest mountain? How were the lakes formed? Name the most important rivers. Describe the Merrimac. Why is there ample water-power? Effect on industries. The climate. Prevailing winds. Mineral resources. The soil. What determines the leading industries? Name the chief occupations. Rank as a manufacturing region. The leading articles produced. The commerce. Exports. Fisheries.

XXVI. NEW ENGLAND STATES (Continued).

1. Maine.—Maine, the largest of the New England States, is the most easterly State in the Union.

It ranks high in manufactures of textiles, paper, lumber, in fisheries, and in the harvesting of ice. Its forests of pine have made it first in the building of wooden ships.

The **timber** which is cut in the forests of the northern part of the State during the winter, is drawn over the frozen snow to the banks of the streams, upon which it is launched and floated down in the spring. Most of it descends the Penobscot river to **Bangor,** where it is sawed into lumber.

Hay is the most valuable agricultural product. Potato growing in the northern part of the State has become very important. Much starch is manufactured from the potatoes.

3. *Stitching the upper.*

4. *Polishing heels and soles.*

2. Cities.—Portland, the principal seaport and largest city, has an excellent harbor and an extensive foreign commerce.

It has railway connections with Canada. A vast amount of the trade between Canada and England is carried on through this port, especially in winter, when the St. Lawrence river is frozen over.

Bangor is the great lumber market of the State.

Biddeford, Saco, Lewiston, Auburn, Waterville, and **Augusta,** the capital, are all located at the falls of rivers, and are important manufacturing towns. The leading product in each is cotton goods. But **Auburn** and **Augusta** have large shoe factories, and **Lewiston,** woolen mills. **Bath** is famous for its lumber trade and shipbuilding. **Rockland** supplies most of the lime used in the Atlantic States.

3. New Hampshire.—This State is often called the "Granite State," because of the abundance of its granite rock, and the "Switzerland of America," because of the beauty and grandeur of its lake and mountain scenery. The White Mountains are the chief natural feature of the State. They contain Mount Washington, the highest point in New England. The State has only a few miles of seacoast, and hence its people are little given to seafaring.

They are largely engaged in working quarries of stone. Grazing is an important occupation; but the most valuable industry is manufacturing; and boots and shoes, cotton and woolen goods, lumber and paper, are the chief articles made.

4. Cities.—Manchester, the largest, and **Nashua,** the second city, are located at falls on the Merrimac, and are important centers of cotton manufacture.

Concord, the capital and third city in the State, contains extensive car shops of the Boston and Maine Railroad, and is celebrated for the manufacture of wagons and coaches. Granite, belting, and silverware are other leading manufactured products of Concord.

Making paper at Portland, Maine: Rags and wood fiber are ground into pulp. This is pressed into sheets by passing through many iron rollers which dry and finish it.

Portsmouth, on the Piscataqua river, is the only seaport in New Hampshire. It has an excellent harbor, upon which directly across

the border at **Kittery,** in Maine, is one of our finest navy yards.

Dover, Keene and **Berlin** have good water-power, and manufacture cotton goods. **Hanover** is the seat of **Dartmouth College.**

5. Vermont. — Vermont (vert, *green;* mont, *mountain*), so called from the Green Mountains which traverse it, is an inland State.

View of Boston, showing the State Capitol, the famous Boston Common, and Tremont Street, a leading business thoroughfare. On the Common next to the street are the entrances to the subway.

It is a fine wool-growing, stock-raising, and dairying country, and is specially famed for its horses. In the production of maple sugar it excels all other States. Its manufactures are steadily increasing, especially those of lumber, paper, and textiles.

Its quarries of marble, granite, and slate are extensive and valuable.

6. Cities.—Burlington, the largest city, is on Lake Champlain. It is extensively engaged in the lumber trade.

Montpelier is the capital. **Barre** and **Hardwick** are noted for their granite works, and **West Rutland** and **Proctor** for marble. The largest scale manufactory in the world is at **St. Johnsbury.**

7. Massachusetts.—Massachusetts, the "Bay State," is the wealthiest and most populous land States. It ranks first in the manufacture of boots and shoes, rubber, cotton and woolen goods. In commerce and wealth it is one of the most prominent.

Making solid silverware at the Gorham works, Providence, Rhode Island. 1. Showing steel rollers which press the silver bars into sheets.

2. Showing how the sheets are hammered into vessels.

8. Cities.—Boston is the capital of Massachusetts, and the largest and most important city of New England. It is distinguished for its places of historic interest.

Boston has a splendid harbor and is the center from which the chief railroads of New England radiate. Its imports rank in value next to those of New York. It receives cotton, wool, hides, coal, and other raw materials from all parts of the United States and from foreign countries. It exports grain, meat, and manufactured products.

Boston ranks fifth among our manufacturing cities. The leading products are refined sugar, clothing, machinery, and books. As a wool and leather market it ranks first.

Cambridge is the seat of **Harvard University,** the oldest of our higher institutions of learning.

The largest manufacturing establishments for cotton and woolen goods are at **Lowell, Fall River,** and **New Bedford. Lawrence** leads in woolens. **Lynn, Haverhill,** and **Brockton** lead in boots and shoes; **Worcester** in textile machinery, wire rope, and woolens.

At **Springfield** is an armory of the United States where rifles for the public service are made. **Holyoke** manufactures paper and textiles. **North Adams** and **Pittsfield** make textiles, paper, and machinery. **Taunton** is noted for the manufacture of locomotives, cotton, machinery, and Britannia ware. **Gloucester** is the chief fishing port of the United States.

9. Rhode Island.—Rhode Island is the smallest, but one of the most densely populated States. It is largely engaged in manufacturing cotton and worsted goods, machinery, firearms, jewelry, silverware, and rubber goods.

10. Cities.—Providence, the second city in New England, and also the State capital, has a large commerce and extensive manufactures of worsteds, jewelry, machinery, silverware, and cotton goods. It is the seat of Brown University.

3. A workman decorating a silver vase.

Newport is beautifully situated on one of the finest harbors in New England, and is noted as a summer resort. **Pawtucket** has the oldest cotton mill in the United Sates. It manufactures textiles and thread; **Woonsocket,** worsteds; and **Central Falls,** cottons.

MAP STUDIES.—Between what parallels do these States lie? Which State is most mountainous? Which border on the Great Lakes?

New York.—What mountains in this State? What lakes form part of the boundary? What rivers? What celebrated falls?

Describe the course of the Hudson. The Genesee. The Black. What lakes are drained by the Oswego River? How do their waters reach the sea?

What lake separates New York and Vermont? Where is Lake George? Trenton Falls? What two islands belong to New York (see small maps)? Where is New York City? Name its divisions. Where is Yonkers? Poughkeepsie? What and where is the capital? Where is Buffalo? What canal connects Buffalo and Albany?

New Jersey.—What portion of this State is mountainous? What river forms the western boundary? What bay the southern? Where is Sandy Hook? What cape at the southern extremity of the State? What and where is the capital? Describe Newark; Jersey City; Paterson.

Pennsylvania.—What parallel forms the northern boundary? What river the eastern? What lake borders the northwestern corner? What large river crosses this State and flows into Chesapeake Bay? What part of the State is traversed by mountain ranges?

Through what part of the State does the Allegheny River flow? The Monongahela? Where do they unite? What two cities at their junction? Where is the Delaware Water-Gap? Where is Philadelphia? What is said of Harrisburg? Scranton? Reading? Lancaster? Erie?

Routes of Travel.—How would you go by steamboat from New York to Albany? From New York to Philadelphia? How do steamers enter the Sound from New York? What is the East River?

SOLAR TIME—When it is Noon on the Meridian of Washington, 11:56 A. M. 12 12:4 P. M. 12:8 12:12

11. Connecticut.—Connecticut ranks first in the manufacture of ammunition and cutlery and makes also much rubber, elastic and silk goods, and hosiery. More than half the plated and Britannia ware, and most of the pins and clocks used in the United States, are made here.

It is largely engaged in the coasting trade.

The valley of the Connecticut is the most fertile portion of the State, and is noted for its fine tobacco crops.

12. Cities.—**Hartford,** the capital, is at the head of navigation on the Connecticut, and is the center of large insurance and manufacturing interests. **New Haven,** the "City of Elms," on Long Island Sound, is the seat of **Yale University,** one of our oldest and most famous educational institutions.

Bridgeport is extensively engaged in manufacturing sewing-machines; **New London,** in the manufacture of silk goods and machinery.

Norwich is a center of cotton manufacture; **Waterbury** makes clocks, watches, and brass ware; **Meriden,** silver-plated ware; **New Britain,** hardware; **Danbury** as a hat manufacturing city ranks first in the United States; **Willimantic** is noted for thread and textiles; **Portland,** for its quarries of red sandstone.

Review Topics.—The largest New England State. Its chief manufactures. Describe Bangor. Portland. The important manufacturing towns. Augusta. Bath. What is New Hampshire often called? Coast-line. Principal industries. Concord. Manchester. Nashua. Dover. Keene. Portsmouth. Where is Dartmouth College? Important industries of Vermont. Its chief cities. The rank of Massachusetts in fisheries; manufactures; commerce and wealth. Describe Boston. Cambridge. Describe Worcester. Springfield. Lynn. New Bedford. Taunton. Which is the smallest State? In what engaged? Locate Newport. Describe Providence. What does Connecticut manufacture? Noted crop of the Connecticut Valley. Describe Hartford. New Haven. Bridgeport. New London. Portland. Other manufacturing towns in Connecticut.

Delaware Water Gap, where the Delaware River cuts its way through the mountains. The mountain tops, all on the same level, show that the region was once a plateau through which the valleys have been cut by the stream.

XXVII. MIDDLE ATLANTIC STATES.

STATE.	Area in Sqr. Miles.	Population, 1900.	Capitals.	Chief Cities and their Population.
New York	49,170	7,268,894	Albany.....	New York...3,437,202
New Jersey.....	7,815	1,883,669	Trenton	Newark 246,070
Pennsylvania.....	45,215	6,302,115	Harrisburg..	Philadelphia.1,293,697
Delaware.....	2,050	184,735	Dover	Wilmington . 76,508
Maryland.....	12,210	1,188,044	Annapolis...	Baltimore ... 508,957
District of Columbia	70	278,718	....	Washington . 278,718
Virginia.....	42,450	1,854,184	Richmond ..	Richmond. .. 85,050
West Virginia.. ...	24,780	958,800	Charleston ..	Wheeling ... 38,878

1. Position and Area.—The Middle Atlantic States embrace nine degrees of latitude. They extend several degrees farther to the south than the New England States, and have a milder climate and more varied agricultural productions. The two sections differ also in many of their leading pursuits.

New York alone is nearly three-fourths the size of all the New England States put together; while all the Middle Atlantic States united are about two-thirds the size of Texas.

2. Coast.—The coast-line of the Middle Atlantic States is remarkably indented. Its harbors are among the best on the Atlantic seaboard.

3. Surface.—Land that is formed of the rock waste that the rivers have brought down from the mountains is called **alluvial.** Level land that has been at one time the bed of the sea is called a **marine plain.**

The seaboard of the Middle Atlantic States, and of all the country to the southward, is partly alluvial and partly marine, and both together form the **Coastal Plain.**

The line where the Coastal Plain joins the Piedmont is marked by falls and rapids, as those of the Delaware at Trenton, the

The fall line at Richmond, Va., where the James River plunges from the Piedmont Plateau to the Coastal Plain. The rocks are granite and are he remains of an old mountain range now worn down.

Schuylkill at Philadelphia, the Patuxent near Baltimore, the Potomac near Washington City, the Rappahannock at Fredericksburg, and the James at Richmond. This line is often called the **Fall Line.**

Beyond the Coastal Plain and beginning at the Fall Line is the **Piedmont,** a broad and fertile strip of rolling and hilly country which, like the Piedmont plateaus of New England, was once very high mountainous country, but has been worn down.

Next we have the Mountain region crossed from northeast to southwest by the Blue Ridge, the Alleghenies, and other ranges of the Appalachian system.

In New York are the **Adirondack** and **Catskill Mountains** which are outlying spurs of the Appalachians. The former contains the loftiest peaks in this group of States, of which **Mt. Marcy** is the highest.

4. Drainage.—The Middle Atlantic States are divided by the mountains into two slopes, one of which inclines toward the southeast, and carries the drainage into the Atlantic Ocean; and the other to the northwest, with drainage both into the Great Lakes, by numerous small streams, and into the Gulf of Mexico through the Ohio and Mississippi rivers.

5. Rivers and Lakes.—The principal rivers of the eastern slope are the **Hudson,** one of the most important water routes to the sea; the **Delaware,** the **Susquehanna,** the **Potomac,** and the **James.** On the western slope are the **Allegheny,** the

Monongahela, and the **Great Kanawha,** all of which enter the Ohio.

The Hudson, the Delaware, the Susquehanna, the Potomac, and the James rivers have cut gaps in the mountains on their way to the Atlantic Ocean. The scenery about such **water-gaps** is often very wild and grand. The rivers are navigable up to the Fall Line.

The **lakes** are chiefly in the State of New York.

The **Falls of Niagara,** over which the water of the Great Lakes descends on its way to the Atlantic, are partly within this State.

6. Climate.—The Gulf Stream sweeps close to the shores of the Middle Atlantic States, and the winds from the sea temper their climate. Their northern section has a temperature similar to that of New England; the southern is much warmer.

7. Minerals.—Most of these States are rich in iron. Coal abounds in Pennsylvania, Maryland, and the Virginias; zinc in New Jersey and Virginia; salt in New York and West Virginia; and petroleum in Pennsylvania, New York, and West Virginia.

8. Pursuits and Products.—The leading pursuits are agriculture, manufacturing, mining, and commerce. The milder climate and richer soil of this section make agriculture more profitable than in New England.

The grains, orchard fruits, berries, and garden vegetables do well in all these States.

Still, so great is the town and city population of this section, and also of New England, in comparison with their rural population, that as we pass in review State after State, from Maine toward the south, we find none of them producing corn and wheat enough for its own consumption until we come to Maryland. This State produces corn and wheat to sell.

Making steel near Pittsburg. The iron is melted in the furnace, poured into little cars called ladles, rolled to the mixer where it is treated, and then poured into the converter. This cut shows a converter ready to be loaded with melted iron from the mixer near by in the center. When it is loaded the converter is turned so that it stands as the other two converters. Hot air is forced through the melted iron, which raises it to white heat, burning out all the impurities and converting it into steel. During this process out of the mouth of the converter pour flames, burning gases and millions of sparks.

The hay and wool crops and the dairy products of New York and Pennsylvania are very large.

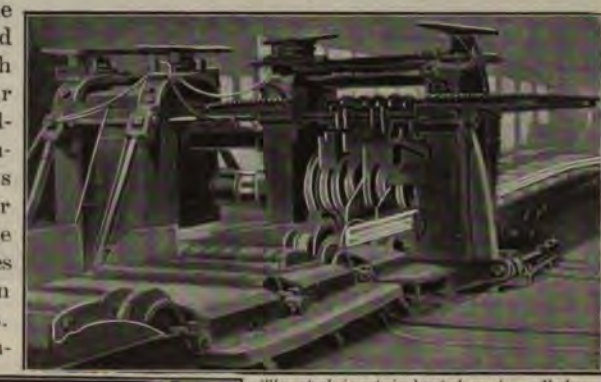
Virginia, Pennsylvania, and Maryland produce and export large quantities of tobacco.

Manufacturing is the leading industry in these States, as in New England. The principal manufactures are iron and steel and a great variety of articles made from these—clothing, silk, woolen and cotton goods, flour, and farming machinery.

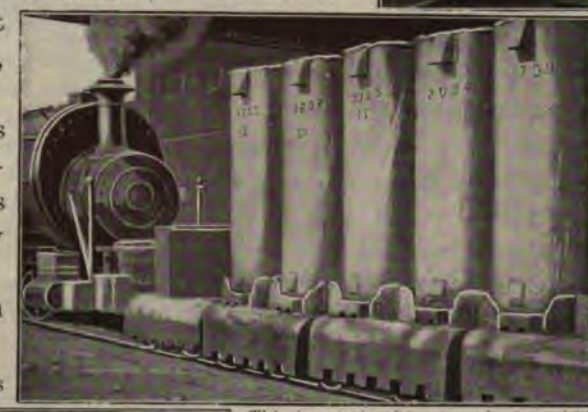
New York and Pennsylvania rank first among the States in manufacturing.

The **Commerce** of these States is more important than that of any other section of the country.

The **Middle States,** like New England, buy enormous quantities of food products for the inhabitants, and raw materials for the manufactures. Most of the railways and canals which traverse our great agricultural and mining regions bring their freight to the seaboard cities of this section for export. All this, combined with the great trade caused by the sale of her manufactures, makes a vast commerce.



The steel ingot is heated again, rolled and cut into two or three lengths called blooms. The blooms are again heated and taken to the great rail mill where they are rolled into steel rails. This cut shows one of the rolling mills.



This is a train of ingot molds, into which the melted steel is drawn from the converters. As it cools the mold is removed and an ingot of steel remains.

The **exports,** which include articles from all sections, are cotton, wheat, flour, corn, tobacco, live stock, petroleum, and manufactured goods.

Review Topics.—Name the Middle Atlantic States. Compare with New England. Describe the coast-line. Harbors. Define alluvial country. Describe the Coastal Plain. The Piedmont Region. What Mountains traverse these States? Describe the slope of these States. Name the principal rivers of each. Describe the water-gaps. The lakes. Niagara Falls. The climate. The mineral productions. The agricultural productions. Which State produces breadstuffs enough for home use? What are the chief crops of each State? The principal manufactures. What State ranks first in manufacturing? Describe the commerce. Exports.

XXVIII. NEW YORK, NEW JERSEY, AND PENNSYLVANIA

1. New York.—New York, the "Empire State," ranks first among the States in wealth, population, manufactures, and commerce.

The climate of Western New York is tempered by the Lakes, which modify the west winds as they sweep over them. This part of the State has, moreover, a fertile soil. It is therefore a fine agricultural country. Wheat, corn, and the hardier orchard fruits flourish here.

New York is famous for its butter, hay, hops, and grapes.

The chief mineral resources of this State are its salt springs and iron ores. It has also valuable oil wells and mineral springs.

The falls and rapids of Niagara have a descent of about 300 feet. They therefore show that Lake Erie is on a terrace 300 feet above Lake Ontario. The smaller lakes are situated on the same terrace with Lake Erie, consequently the rivers, which carry the water of these lakes into Lake Ontario, have either to leap precipices or to descend by rapids in order to escape from this terrace. Their falls afford fine water-power.

2. Cities.—**New York** is the largest and richest city in

The harbor of New York consists of the Hudson river, the East river, and the bay in which they meet at the southern end of the island. This picture shows the East river looking toward Brooklyn. The long, white buildings are piers where ships lie; on the shore are warehouses where goods are stored. The ferryboat is coming from Brooklyn to Wall Street. The first steamship on your right goes to the Bahamas, the next to Cuba; next come the Mallory Line steamers. Near the Brooklyn Bridge are piers of steamboats sailing for cities on Long Island Sound. Most of the steamer piers are on the Hudson river.

America, and is second only to London among the great cities of the world. It comprises five boroughs, the most important of which are Manhattan (old New York) and Brooklyn, which are connected by the largest suspension bridges in the world.

In manufactures New York ranks first among our cities, and her commerce is nearly equal to that of all the other parts of the country put together.

The leading exports from New York are grain and flour, meat and dairy products, iron and steel goods, and petroleum. The imports are mainly raw sugar, coffee, textile goods, tobacco, and every sort of manufactured wares.

There are many great banks and trust companies in the city which have in them hundreds of millions of dollars. This money is used to carry on commerce and to establish great enterprises in all parts of the United States. This makes New York one of the great money centers of the world.

Yards of the Pennsylvania Railroad at Jersey City, showing the freight cars loaded with articles which make up part of the commerce of New York.

It is the seat of Columbia University and the University of the City of New York.

Albany, the capital of the State, is a great lumber market, and has car shops and foundries.

It is at the head of navigation on the Hudson and at the mouth of the Erie and Champlain Canals.

3. Buffalo, at the western end of the Erie Canal, is a leading lake port and depot for grain, cattle, sheep, and lumber. It has extensive manufactures and a large commerce on the Lakes.

Buffalo harbor: a grain elevator and a whaleback freight ship.

Rochester, on the Genesee, and **Oswego,** at the mouth of the Oswego River, possess fine water-power. Cameras, lenses, clothing, and boots and shoes are the leading products of Rochester, hardware, hosiery and knit goods of Oswego. In and near Rochester are renowned nurseries of fruits and flowers. **Syracuse** manufactures hardware, machinery, and clothing.

From the salt springs near Syracuse, and the salt works in the district of **Warsaw,** nearly one-fourth of the annual salt product of the United States is obtained. **Utica** manufactures textiles, **Schenectady,** locomotives.

Troy makes collars and cuffs and has enormous laundry works. Its Polytechnic School is one of the best.

Saratoga is celebrated for its mineral springs.

The country bordering upon the Hudson is in a high state of improvement. Handsome houses and beautiful grounds meet the eye at every turn, and lend enchantment to the scenery. **Newburg** and **Poughkeepsie** are manufacturing cities. The United States Military Academy is at **West Point** on the Hudson, and Vassar College, a noted college for women, is at Poughkeepsie.

Yonkers is noted for carpets and rugs; **Binghamton,** cigars and shoes; **Elmira,** fire engines, iron wares, and knit goods; **Auburn,** harvesting machinery; and **Watertown,** air-brakes and carriages.

4. New Jersey.—The greater part of New Jersey lies within the very productive Coastal Plain of the Atlantic seaboard, and has a mild climate. It is, therefore, specially adapted to agriculture. The farms are largely devoted to market gardening, and supply New York and Philadelphia with fruits and vegetables.

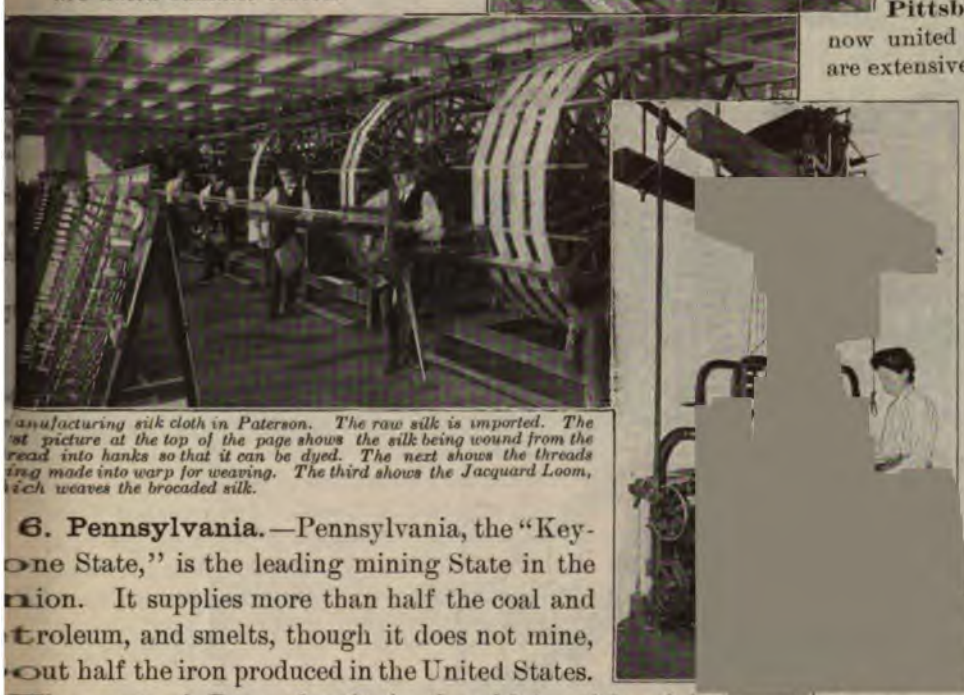
The State is **rich in mines** of iron and zinc, and in deposits of marl, a kind of earth used for fertilizing.

This State ranks first in the manufacture of sewing machines and silk goods and in the dying of textiles, and second in the refining of petroleum.

5. Cities.—**Newark,** the largest city, is noted for its manufactures of India rubber, leather goods, clothing, jewelry, chemicals, and hats. **Paterson** is celebrated for railway locomotives and silk goods; **Camden** for its dry docks. **Jersey City** and **Hoboken,** at the mouth of the Hudson, are largely engaged in shipping and manufacturing.

Princeton is the seat of Princeton University, one of the most celebrated educational institutions in the United States.

Trenton has extensive iron works and potteries. **Elizabeth** manufactures sewing machines and builds ships. **New Brunswick** has large rubber works. **Atlantic City, Cape May, Long Branch,** and **Asbury Park** are noted summer resorts.



anufacturing silk cloth in Paterson. The raw silk is imported. The st picture at the top of the page shows the silk being wound from the read into hanks so that it can be dyed. The next shows the threads ing made into warp for weaving. The third shows the Jacquard Loom, ich weaves the brocaded silk.

6. Pennsylvania.—Pennsylvania, the "Keystone State," is the leading mining State in the nion. It supplies more than half the coal and troleum, and smelts, though it does not mine, out half the iron produced in the United States.

The **coal** of Pennsylvania is the chief article of fuel used roughout the Middle Atlantic and New England States for mestic purposes, for smelting, and for the production of eam power. Anthracite coal is found in the eastern part of e State, and bituminous in the estern.

Making gold eagles in the Philadelphia mint. 1. The gold bars are rolled into strips the thickness of an eagle.

The **petroleum** of Pennsylvania extensively used for fuel, for mps, and for the lubrication of achinery. It is one of our ief articles of export, and is nt in ships fitted with tanks to early all parts of the world.

The crude oil is pumped from the wells to the seaboard and lake cities through **iron pipes,** of which there are several thousand miles. They spread through the oil region like a vast network.

Some of the wells, when first bored, yielded several thousand barrels each day. The yield afterwards became less.

In **manufactures,** Pennsylvania ranks as the second State in e Union and leads all the rest in the making of carpets and gs, glass, iron and steel, leather, and the refining of petroleum.

The soil and climate are well adapted to agriculture. The ops of grain and tobacco, as well as the grazing products, are ery important.

7. Cities.—Philadelphia is the third city in the country in population, and one of the first in manufactures and commerce. Its greatest manufactures are iron, machinery, refined sugar, carpets and rugs, cotton and woolen goods, and leather, all of which are extensively exported. It is the greatest coal depot in the United States.

It is celebrated for its medical schools and academies, its charitable institutions, and its historic buildings. Here is the Old State House where the **Declaration of Independence** was signed, July 4, 1776.

Pittsburg, the second city in the State, and **Allegheny City,** now united with Pittsburg, are at the head of the Ohio River. Both are extensively engaged in manufacturing iron and glass. Petroleum and bituminous coal are sent out in vast quantities. **Erie** is the lake port of the State. It ships coal and iron. **Williamsport** is a great lumber market. **Lancaster** is an important tobacco market.

The flourishing cities of **Scranton, Reading, Wilkes-Barre,** and **Pottsville** are in the coal region, and are all engaged in iron and steel industries and the coal trade. **Harrisburg,** the capital, is largely interested in the manufacture of iron. **Altoona** has the largest car shops in the State; **Johnstown** makes steel and hardware; **Allentown,** steel and silk goods; **McKeesport,** steel and lumber; **Chester,** cotton and worsted goods, steel, and hardware.

Review Topics.—How does New York rank in wealth, in population, in commerce, in manufactures? For what products is New York famed? What are its minerals? How much higher is Lake Erie than Lake Ontario? Describe New York City. Albany. Buffalo. Rochester. Oswego. Troy. The Hudson. West Point. Why is New Jersey adapted to agriculture? What are its minerals? Describe Newark and Paterson. Jersey City. Hoboken. Princeton. Trenton. In what does Pennsylvania excel? How much iron does she produce? Coal? Petroleum? Manufactures? Important agricultural products? Describe Philadelphia. Pittsburg. Allegheny City. Reading, Pottsville, Scranton, and Wilkes-Barre. What is the capital?

XXIX. DELAWARE, MARYLAND, VIRGINIA, AND WEST VIRGINIA.

1. Delaware.—Delaware lies altogether in the Coastal Plain. It is poor in minerals, but rich in soil, and favored

2. The strips being passed through a machine which cuts out disks.

3. Making the disks into gold eagles by stamping them with the steel dies.

with a moderate climate.

It is therefore a fine fruit country, and is specially famed for its peaches. Many people are employed in supplying the markets of Philadelphia, New York, and Baltimore with fruits and vegetables.

Wilmington, the principal city, is extensively engaged in manufacturing gunpowder, locomotives, railroad cars, paper, and flour, and in building steel and iron steamships.

SOLAR TIME—When it is Noon on the Meridian of Washington, 11:44 A. M. 11:48 11:52 11:56 12 12:4 P. M.

DISTRICT OF COLUMBIA
Scale, 6 Miles=1 Inch

BALTIMORE AND VICINITY
Scale, 2 Miles=1 Inch

NORFOLK AND VICINITY
Scale, 2 Miles=1 Inch

RICHMOND AND VICINITY
Scale, 2 Miles=1 Inch

79° Longitude West 78° from Greenwich 77° 76°

MIDDLE ATLANTIC STATES
SOUTHERN DIVISION

Dover is the capital. **New Castle** has extensive fruit-canning dustries.

2. Maryland.—The peninsula between the Delaware and esapeake Bays belongs in part to Delaware, in part to Maryd, and in part to Virginia. It rises but little above the sea vel, and is without mountains, lying wholly within the Coastal ain. The winter climate of this "Eastern Shore," as it is lled, is one of peculiar mildness, due to the waters around it. Tobacco, fruit, and grain are leading agricultural products. The western part of the State is crossed by ranges of the Apalachians, which abound in coal, the mining of which, therefore, nstitutes an important industry in this part of the State.

Baltimore.—The oyster fleet which brings the famous oysters up to the city.

Chesapeake Bay is remarkable for its fish and game. The oysters, shad, and herring obtained in Chesapeake Bay add millions of dollars a year to the wealth of the State. Its canvas-back ducks, terrapin, and oysters are unsurpassed.

From the **oyster-beds** of this bay the West is largely supplied. Fishermen obtain the oysters from the bed of the bay with long-handled rakes called tongs.

3. Cities.—Baltimore is one of the most important commerl and manufacturing centers. It manufactures clothing, toco, canned goods, iron and steel, and flour, and has a large olesale trade. Its chief exports are grain, flour, cattle, lard, oil, d petroleum.

Its position near the head of Chesapeake Bay and the fact that railroads connect it directly with the leading commercial cities of the Mississippi Valley make it one of the important outlets for the products of that region. Lines of steamers connect it with domestic and foreign ports.

Baltimore is the seat of **Johns Hopkins University** and **Loyola College.**

Annapolis is the capital of the State, and the seat of the United States Naval Academy. **Cumberland,** in the coal regions, has extensive manufactures of iron and steel.

Hagerstown manufactures automobiles, organs, lumber, furniture, and vehicles. **Frederick** is also a manufacturing town.

4. District of Columbia.—The District of Columbia, so called in honor of Columbus, embraced originally an area of 100 square miles. It was ceded in 1790 to the United States, in part by Virginia and in part by Maryland, for the purpose of establishing here the seat of the General Government.

In 1846 Congress ceded back to Virginia her portion, so that now the District contains only about seventy square miles.

It is governed by three Commissioners appointed by Congress.

5. Washington, the seat of government of the United States, is situated in the District, on the Potomac river. The site was selected by General Washington, and it is now one of the handsomest capitals in the world.

White House and grounds. The Capitol is in the distance.

Its most **important public buildings** are: The Capitol; the Congressional Library; the Treasury; the State, War, and Navy Departments; the White House, the home of the President; the Smithsonian Institution; the National Museum; the Agricultural Department; the Patent Office; the Observatory. The Washington Monument is 555 feet high.

6. Virginia.—Virginia, the oldest of the "Original Thirteen," is sometimes called the "Old Dominion." It has nearly the same area as Pennsylvania.

The Allegheny Mountains and the Blue Ridge cross the State nearly parallel to each other. The country lying between them, varying in breadth from 30 to 70 miles, is the celebrated Valley of Virginia. It is the garden-spot of the State.

MAP STUDIES.—Name the States on this map. What parts are untainous? Which State has no sea-coast? What States nearly inse Chesapeake Bay?

Delaware.—Has Delaware any mountains or large rivers? Within at region, then, does it wholly lie? What bay and river form the stern boundary? What is the capital of the State, and where is Wilngton? New Castle?

Maryland.—Describe the surface of the western part. The eastern rt. What river separates Maryland from Virginia and West Virginia? hat great bay divides this State? What important river enters the ad of this bay?

What large city near the mouth of the Patapsco river (see small p)? What is the capital? Where is Frederick? Hagerstown?

District of Columbia.—What river forms the southwestern boundy of the District? What important city is located here?

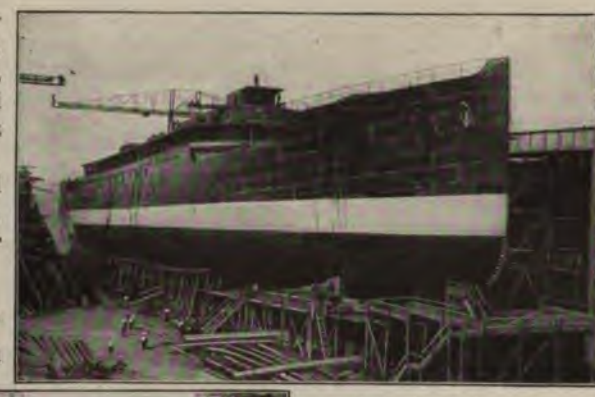
Virginia.—What mountain range traverses Virginia? What ranges the western boundary? What mountains divide Virginia and Kentucky? What river forms the northern boundary? How does the eastern portion of Virginia differ from the western? What great bay intersects the eastern part of Virginia? What two capes at its entrance? What rivers enter this bay? What three rivers break through the Blue Ridge? What is the capital? Describe Lynchburg; Alexandria; Fredericksburg; Staunton; Winchester; Danville; Lexington.

West Virginia.—What rivers form the western boundary? What rivers flow into the Ohio? What is the principal river in the State? What is the only river rising in this State and flowing into the Atlantic? Where does it break through the Blue Ridge? What river joins it here? What is the capital of the State, and where? Where is Wheeling? Parkersburg? Martinsburg? Huntington?

Routes of Travel.—On what bodies of water would you sail in going from Baltimore to Philadelphia? How would you go in a steamboat from Washington to Richmond? Norfolk to Wilmington? Annapolis to Fredericksburg? Wheeling to Charleston? What mountain ranges would you cross in going by rail from Richmond to Louisville?

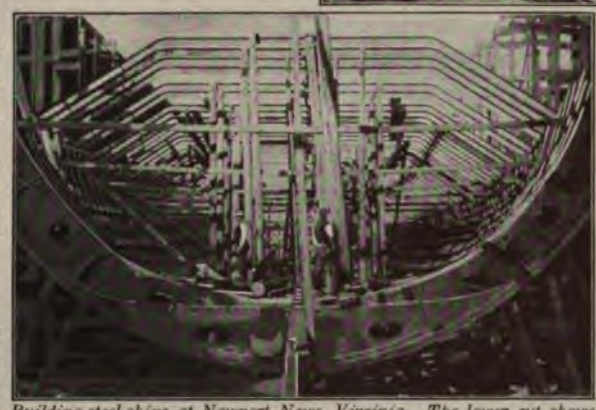
The Luray Caves, which rival the Mammouth Cave of Kentucky in grandeur. **Weyer's Cave,** and the **Natural Bridge,** with its singular archway of rock, are all in this valley, and are objects of great interest to tourists.

Numerous rivers rise in the mountains and flow across the State into the Atlantic, Many of them, in the upper parts of their courses, furnish **water-power.**



Virginia is rich in coal, iron, manganese, and zinc, and is the third State in the production of tobacco. The other agricultural products are corn, wheat, live stock, dairy products, and vegetables.

It shares with Maryland the oyster-beds of Chesapeake Bay.



Building steel ships at Newport News, Virginia. The lower cut shows the steel framework of the ship which is upon the "ways." The second cut shows the same ship ready for launching. When the props are knocked out the ship slides down the ways into the water. Afterward the machinery is put in and the vessel finished.

7. Cities.—Richmond, the capital and largest city, has extensive tobacco factories, flour mills, large foundries, machine shops, and locomotive works. It is the chief railroad center of the State.

Norfolk is the principal seaport, and has an important commerce. Its harbor is not surpassed in the United States. At **Portsmouth** is a navy yard of the United States.

Petersburg, Lynchburg, and **Danville** are important tobacco markets and manufacturing cities. **Roanoke** is a center of iron and steel manufactures.

Newport News has great shipyards, where the largest steel battleships, cruisers, and merchant ships are built. It is also an important shipping port.

A view of the harbor of Norfolk, showing the small boats loaded with fruits and vegetables brought in for shipment to Northern markets.

Alexandria, near Washington, is a place of considerable trade. The University of Virginia, one of our most noted seats of learning, is at **Charlottesville. Mt. Vernon,** a beautiful spot on the Potomac, was the home of Washington.

8. West Virginia.—In 1863 the northwestern portion of the "Old Dominion" was organized as a separate State under the name of West Virginia.

The mountains of this State abound in iron and coal; the forests yield the finest of timber. In the valleys are salt springs, petroleum wells, and mineral waters. Among the last are the celebrated White Sulphur Springs.

Manufactures of iron and steel are the most important industries, and lumber, soft coal, and petroleum are important products.

9. Cities.—Wheeling, on the Ohio, is the largest city. It is surrounded by hills richly stored with bituminous coal, and is largely engaged in the manufacture of iron and steel and tobacco.

Charleston, on the Kanawha River, is the capital. It is the center of the coal and lumber trade.

Parkersburg, in the oil region, has large petroleum refineries.

A coal breaker in West Virginia. The coal comes from the mines in masses of varying sizes. It is here crushed, cleaned, and graded in sizes. It then drops into cars which carry it to market.

Review Topics.—The surface and soil of Delaware. Its productions. Manufactures of Wilmington. The capital. Of what peninsula does Maryland occupy a part? Chief Products. Describe Baltimore; Annapolis; Cumberland; Frederick; District of Columbia. How governed? Describe Washington. What is Virginia sometimes called? What mountains cross this State? Describe the Valley. The caves. The rivers. Minerals. Productions. Oyster-beds. Describe Richmond. Norfolk. Portsmouth. Newport News. Petersburg. Lynchburg. Roanoke. Alexandria. Charlottesville. Mt. Vernon. West Virginia. Products. Describe Wheeling. Charleston. Parkersburg.

XXX. SOUTHERN STATES.

State.	Area in Sqr. Miles.	Population, 1900.	Capitals.	Chief Cities or Towns and their Population.
North Carolina...	52,250	1,893,810	Raleigh	Wilmington... 20,976
South Carolina...	30,570	1,340,316	Columbia.....	Charleston 55,807
Georgia	59,475	2,216,331	Atlanta	Atlanta..... 89,872
Florida	58,680	556,690	Tallahassee...	Jacksonville... 28,429
Alabama	52,250	1,828,697	Montgomery..	Mobile..... 38,469
Mississippi	46,810	1,551,270	Jackson	Vicksburg. .. 14,834
Louisiana.....	48,720	1,381,625	Baton Rouge..	New Orleans...287,104
Texas	265,780	3,048,710	Austin	San Antonio... 53,321
Arkansas.....	53,850	1,311,564	Little Rock...	Little Rock.... 38,307
Tennessee.....	42,050	2,020,616	Nashville.....	Memphis ... .102,320
Indian Territory..	31,400	392,060	(Not organized)	Ardmore..... 5,681
Oklahoma Ter....	39,030	398,331	Guthrie.....	Oklahoma City. 10,037

1. Position, Size, and Population.—The Southern States lie between the parallels of 25° and 37° north. They embrace about the same breadth of latitude as the Middle Atlantic and the New

SOUTHERN STATES.

EASTERN DIVISION.

MAP STUDIES.—Between what parallels of latitude are these States situated? What two form the northern boundary? What States border on the Atlantic Ocean? On the Gulf of Mexico? The Mississippi River? Which State has the longest coast-line? Which State is without seacoast? In what mountain ranges do nearly all the rivers of these States take their rise? What general directions have they? Trace the ridge of sandhills extending across these States. (It is shown by a light mountain line. It divides the upland and lowland of these States.) What kind of climate should you expect to find in these States? Which of these States has the warmest climate? When it is noon at Washington, what time is it at Columbus, Georgia? When it is noon at Columbus, what time is it at Columbia, South Carolina?

North Carolina.—What is the eastern boundary? What mountain chain forms the western boundary? What mountain range crosses the State? Where is Mt. Mitchell? Where are Balsam Mountains? In what direction does the eastern part of the State slope? The western part? What mountains form the watershed of this State? Name the capes on the coast. What sounds in the eastern part? (A series of long, narrow, sandy islands separates these sounds from the sea.) Where is Roanoke Island? What river flows into the Atlantic near Cape Fear? What and where is the capital? Describe Wilmington. Charlotte. Fayetteville. Newbern.

Tennessee.—What mountains separate Tennessee and North Carolina? What mountains cross Tennessee? What is the western boundary? Name the principal rivers. What river receives all the drainage of this State? What large river crosses the State twice? What part of the State is traversed by the Cumberland? Are there any important rivers that flow into the Mississippi directly from this State? What is the capital? How is it situated? Describe Memphis. Knoxville. Chattanooga. Jackson.

South Carolina.—What mountain range forms the northwestern boundary? What river the western? Name the chief rivers. What two form the Santee? What is the Wateree called in North Carolina? What river do the Saluda and Broad form? Where is the Great Pedee? What river east of the Pedee? Where is Edisto Island? St. Helena? Sullivan's Island? What large city between the mouths of the Ashley and Cooper rivers? Name the capital. Describe Columbia. Greenville. Spartanburg. Newberry.

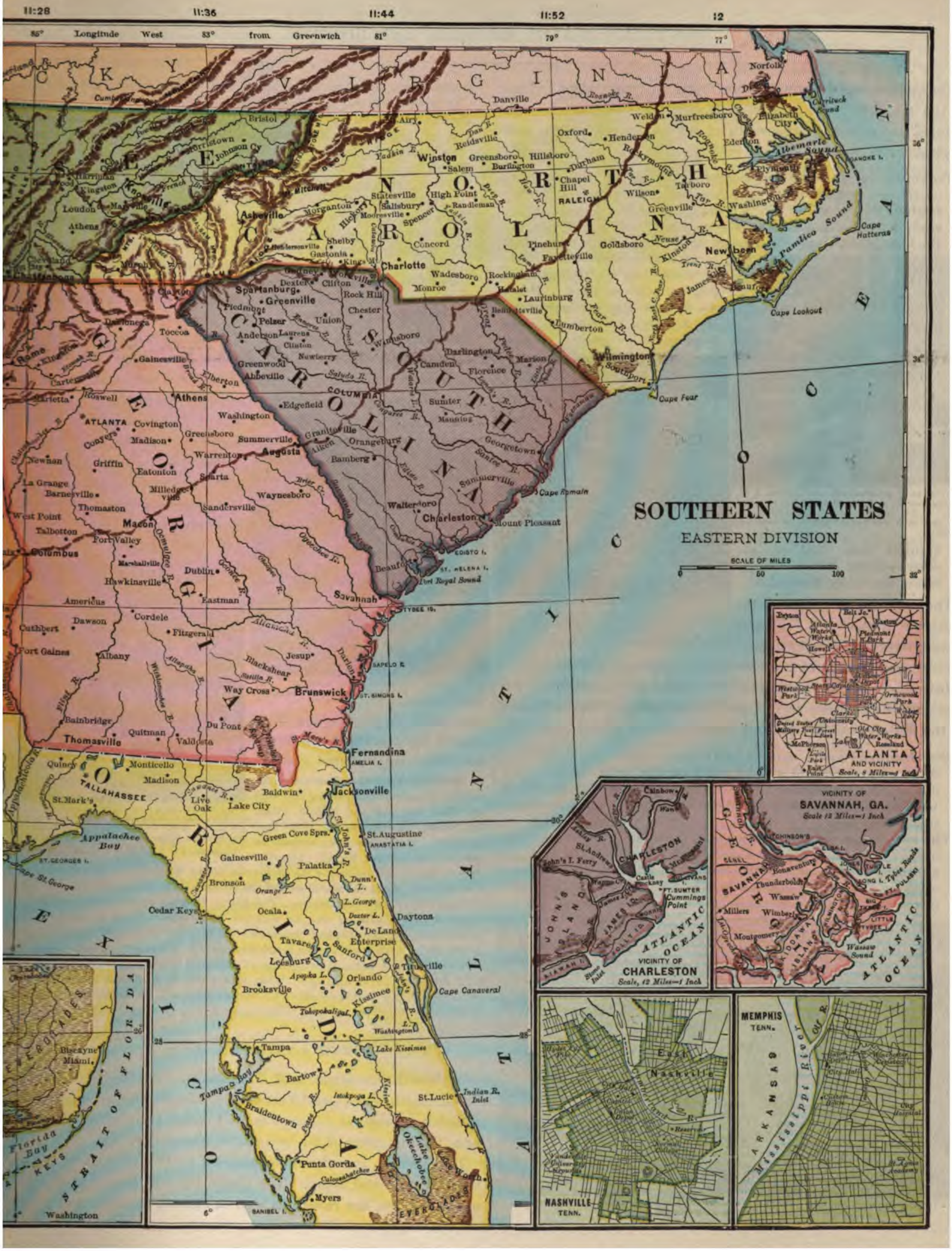
Georgia.—What part is mountainous? Name one range in the northwest. Where is the Okee-fi-no'kee Swamp? What parallel forms the northern boundary? What river the eastern? What river a part of the western? What river a part of the southern? Describe the course of the Chattahoochee. The Flint. What two rivers unite to form the Altamaha (*Al-ta-ma-haw'*)? What river south of the Savannah? Where is the Allapaha? Name the islands on the coast. Where is Savannah? What is the capital? Describe Augusta. Columbus. Athens. Macon.

Florida.—What natural division of land is this State? In what part of the State are most of the towns? Describe the course of the St. John's river. Of the Suwanee. Name the largest lake. Where are the Everglades? Name the capes on the coast. What bays on the coast? Where are Florida Keys? Where is Key West, the most southerly town in the United States? Dry Tortugas? Where is the capital? Describe Pensacola. Jacksonville. Fernandina. St. Augustine.

Alabama.—What part of Alabama is mountainous? What two rivers flow into Mobile Bay? What rivers form the Alabama? Describe the course of the Coosa. Of the Alabama. Of the Tombigbee. What large river flows through the northern part of Alabama? What river flows between Alabama and Georgia? Describe Mobile. The capital. Birmingham.

Mississippi.—What rivers form the western boundary of Mississippi? Name the principal rivers of this State. What two rivers enter the Mississippi near Vicksburg? Where is Mississippi Sound? What is the capital? On what river is it? Describe Vicksburg. Natchez. Meridian.

Routes of Travel.—How would you go by steamboat from Wilmington, North Carolina, to Macon? From Jacksonville to Selma? Florence to Memphis? Jackson to Mobile? New Orleans to Nashville?



SOUTHERN STATES
EASTERN DIVISION
SCALE OF MILES
0
50
100
Longitude West from Greenwich
11:28
11:36
11:44
11:52
12
85°
83°
81°
79°
77°
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
FLORIDA
VIRGINIA
ATLANTIC OCEAN
Norfolk
Danville
Bristol
Winston
Greensboro
Durham
RALEIGH
Chapel Hill
Asheville
Charlotte
Concord
Wilson
Goldsboro
New bern
Wilmington
Southport
Cape Fear
Cape Lookout
Cape Hatteras
Pamlico Sound
Albemarle Sound
Spartanburg
Greenville
Anderson
COLUMBIA
Camden
Florence
Sumter
Georgetown
Charleston
Beaufort
Cape Romain
Port Royal Sound
ATLANTA
Athens
Augusta
Macon
Columbus
Savannah
Brunswick
Thomasville
Fernandina
TALLAHASSEE
Jacksonville
St. Augustine
Gainesville
Ocala
Palatka
Daytona
Orlando
Tampa
Tampa Bay
Punta Gorda
Myers
Lake Okeechobee
Cape Canaveral
Appalachee Bay
Cedar Keys
Miami
Biscayne
STRAIT OF FLORIDA
Florida Bay
KEYS
EVERGLADES
ATLANTA AND VICINITY
VICINITY OF SAVANNAH, GA.
Scale 12 Miles=1 Inch
VICINITY OF CHARLESTON
Scale, 12 Miles=1 Inch
NASHVILLE TENN.
East Nashville
MEMPHIS TENN.
Mississippi River
ARKANSAS

to the cultivation of grain, tobacco, fruits, and vegetables. That of the southern part is semi-tropical. This section is well watered and suited to the growth of sugar cane, cotton, rice, and tropical fruits.

The copious supply of moisture enjoyed by this portion of the country contributes to make it the very first among the **cotton-growing regions** of the world. In a climate that is less humid, as, for example, that of India, cotton will grow and yield abundantly, but the fiber is short, and this renders it far more difficult to spin into yarn and weave into cloth.

Photographs of a cotton mill in Columbia, S. C., showing four steps in the manufacture of cotton goods. 1. The carding machine straightens the fiber and rolls the cotton, which is gathered into cans.

The winds from the Gulf bring the frequent summer rains. Hence we find in the southern parts of Alabama, Mississippi, and Louisiana a greater annual **rainfall** than that of any other portion of the country east of the Rocky Mountains.

2. The cans containing the rolls which have been combed are placed in front of this machine. Five or six of the rolls are drawn out at one time, and afterward twisted together to make a cord which is wound upon big spools.

The majority of people in the Southern States are engaged in agriculture. Manufacturing, mining, and commerce are the other important industries.

Influence of Inventions.—The industrial pursuits of the Southern States were very largely determined by the invention of the cotton-gin, the spinning-jenny, and the power-loom.

One hundred years ago the cultivation of cotton in the Southern States was confined to a small patch on each farm, capable of producing a few pounds only. The seeds were picked from the cotton by hand, and the cotton spun and woven by the women of the family into "home-spun."

The cotton-gin removes the seed from the cotton. In a few minutes one can do as much work as a whole family could do in a week. A **spinning-jenny** and a **power-loom** can spin and weave as much cotton in a day as a woman could in a year. These inventions made cotton planting the great industry of the Southern States. The annual crop, now ten to twelve million bales, is about three-fourths of the world's supply.

Shipping cotton by railroad.—Freight cars loaded with cotton at the station at Houston, Texas, during the busy season.

From the seed an oil is pressed as fine as olive oil. The cake which is left is ground and sold for cattle feed and fertilizers. **Cotton-seed-oil** mills are numerous.

Within the past few years the attention of the people of the Southern States has been largely directed to the **manufacture** of cotton. Extensive mills have been erected, and the production of cotton goods has steadily increased. The number of mills has more than doubled in ten years.

The **advantages** which attract the cotton-spinner to this region are these: (1) the raw material is produced at his very doors, and he is therefore in a large measure saved the expense of transportation; and (2) numerous streams descending to the sea from the mountains furnish unlimited water-power.

Commerce.—The commerce of these States consists chiefly in the sale of cotton, sugar, rice, lumber, coal, iron, naval stores, cotton cloth, and cotton-seed oil. They buy fine textiles, clothing, boots, shoes, hats, furniture, agricultural implements, silverware, and other manufactured articles, and often flour, corn, and meat from the other States. Numerous railways and navigable rivers afford ample means of **transportation.** The leading **imports** are raw sugar, coffee, and tea; bananas, pineapples, and other tropical fruits from Mexico, Central and South America; also manufactured goods.

3. The spools are placed on this machine. Here the cords from six spools are twisted together to make one thread.

4. On the cylinders shown here are wound certain threads called the warp, while little spools of thread are placed in the shuttles which move backward and forward, filling the warps and making cloth.

[Copyrighted by Underwood & Underwood, 1904.]

Review Topics.—Name the ten Southern States. Compare in size with the New England and Middle Atlantic States. In population. Coast line. Harbors. How does the surface resemble that of the Middle Atlantic? How do the mountains divide the States east of the Mississippi? Into what do the rivers flow? What elevations west of the Mississippi? Describe the forest belts. Swampy belt. Live-oak forests. Pine belt. How far are the rivers navigable? Describe the Mississippi and its southern tributaries. What minerals in the mountains? In Alabama and Tennessee? In Georgia and North Carolina? In Louisiana? Arkansas? Other Southern States? Climate? What makes the Southern States a cotton-growing region? Describe the rainfall in some of the Gulf States. The occupations. What inventions have affected the industries? What effect did they produce? Cotton manufacture in the Southern States. Commerce. Principal exports. Chief imports.

XXXI. NORTH CAROLINA AND TENNESSEE.

1. North Carolina and Tennessee.—North Carolina, the "Old North State," and Tennessee are mainly between the same parallels of latitude. Except in the Coastal Plain of North Carolina, the industries of the two States are similar.

Both States are admirably adapted to the growth of grain, tobacco, flax, and hemp. The grape, fig, and peach, with other orchard fruits, are raised, as well as melons, peanuts, and sweet

potatoes. Cotton is extensively cultivated except in the mountain sections.

The territory constituting Tennessee once belonged to North Carolina, and was settled chiefly by emigrants from that State. **Daniel Boone,** the celebrated hunter, who led the way for settlers, both into Kentucky and Tennessee, was a North Carolinian.

View on the Asheville plateau, showing the mountains which tower above it and the French Broad river that cuts its way through the mountains into Tennessee.

2. North Carolina. — The highest mountains east of the Mississippi are in this State. The highest of these is Mt. Mitchell. There are 43 peaks 6,000 feet and upwards in height, and 82 between 5,000 and 6,000.

The plateau here is over 2,000 feet above the sea level, and its dry air and beautiful scenery have made it famous as a health resort.

Selling tobacco at auction in Winston, N. C. This scene is called a tobacco break.

North Carolina is an important manufacturing State. It ranks third in the United States in the manufacture of cotton goods. The Piedmont section is dotted with cotton mills. The tobacco grown there is of the finest grade. The State stands second in the Union in the value of its tobacco crop and third in manufactured tobacco.

The eastern section abounds in cypress swamps and forests of long-leaf or pitch pine. The cutting of lumber, cypress staves and shingles are leading industries. The gathering of naval stores is also a very important industry.

In the Coastal Plain rice is grown, and early fruits and vegetables are cultivated for Northern markets. The sounds and rivers of this region abound in fish. The fishing industries are of great value. In Albemarle Sound as many as 300,000 herring have been caught at a single haul.

In the Piedmont and mountain regions, gold, iron of the finest quality, coal, marble, and precious stones are found. The mica and corundum deposits are the richest known on this continent.

3. Cities.—Raleigh, the capital, is a manufacturing center. **Wilmington** is the chief city, and exports naval stores, lumber, rice, and cotton. It contains many sawmills and manufactures turpentine, tar, and rosin.

Charlotte is an important railroad and manufacturing city. **Asheville** is a famous health resort in summer and in winter. **Greensboro** has large finishing mills and a big tobacco trade. **Winston** leads in the manufacture of plug tobacco. **Durham** manufactures the most famous smoking tobacco in the world. **Newbern** is noted for its trade in early vegetables. **High Point** manufactures furniture.

4. Tennessee consists of three sections: East, Middle, and West Tennessee. **East Tennessee** lies east of the Cumberland Mountains. It is mountainous, and rich in coal, iron, and copper. Its marbles are of great beauty and variety. Its valleys are famous for their rich soil and beautiful scenery. The great valley of eastern Tennessee is really a continuation of the valley of Virginia.

Middle Tennessee is a rolling country, extending from the Cumberland Mountains westward to the Tennessee river. It excels in the production of wheat, corn, and tobacco. Here, in the blue-grass region, are celebrated stock farms.

West Tennessee is comparatively level. It is the great cotton-growing section of the State.

5. Cities.—Nashville, the capital, on the Cumberland river, is the second city in the State. It manufactures flour, fertilizers, lumber, and tobacco, and has a considerable commerce. The Peabody Normal College, Vanderbilt University, and other important educational institutions are here.

Memphis, on the Mississippi river, the first city in the State, is the greatest inland cotton market, and the largest producer of hardwood lumber and cotton-seed products in the world. A fine cantilever railway bridge here spans the river.

Chattanooga, on the Tennessee river, is a very important railroad center. It manufactures flour, lumber, furniture, and patent medicines, and has large iron furnaces and foundries.

Above Florence, Alabama, a **canal 10 miles** long carries boats around the famous mussel shoals of the Tennessee river.

Knoxville is the commercial center of east Tennessee, at the head of navigation of the Tennessee river. **Jackson** manufactures lumber. **Clarksville** is engaged in the tobacco trade.

The Mississippi river front at Memphis, Tenn., looking up the river. On the left are small steamboats In the center is a wharf-boat which takes the place of a wharf, and beyond are larger side-wheeled steamers. It is impossible to build wharves here because of the rising and falling of the river. Merchandise is received on the wharf-boat or piled on the landing, as you can see in the picture. As the Mississippi rises the boats land higher and higher up the bank, until finally they reach the telegraph poles.

Review Topics.—Compare North Carolina and Tennessee in latitude and products. Who first settled Tennessee? Describe the mountains. The chief industries. Where is rice grown? Where is the mining region? Describe Albemarle Sound. The capital. The chief cities. Divisions of Tennessee. Chief cities.

XXXII. SOUTH CAROLINA AND GEORGIA.

East Battery at Charleston.

1. South Carolina and Georgia.—South Carolina and Georgia resemble each other in physical features. They both front on the Atlantic, and slope from the mountains to the ocean.

Their shores are fringed with the Sea Islands, which are celebrated for a kind of cotton called the sea island cotton. It is the finest in the world.

It has a long silky fiber, and is chiefly used for the manufacture of laces and other fine fabrics.

These States are alike in climate and industries.

2. South Carolina.—In the manufacture of cotton goods, South Carolina ranks first among the Southern States, and second in the United States. Rice and sea island cotton are grown along the coast, and cotton and corn in all parts of the State. Truck farms are numerous, and tea culture is conducted with some success.

View of naval stores on the wharf at Savannah, Ga., awaiting shipment. Savannah ships more naval stores than any other port in the world.

3. Cities.—Charleston is the principal city and chief seaport of the State. It is an important rice market, and ships large quantities of cotton, vegetables, and naval stores. Near the city are vast deposits of phosphate rock which is used in the manufacture of fertilizers.

Columbia, the capital, on the Congaree river at its falls, is an important manufacturing city. It is noted for its beauty, and is the seat of the University of South Carolina.

Greenville and **Spartanburg** are important cotton manufacturing cities.

The Winthrop Female Normal and Industrial College is at **Rock Hill**; the Clemson Agricultural College is at **Fort Hill,** the old home of John C. Calhoun; and the South Carolina Military Academy is at Charleston.

4. Georgia.—Georgia is one of the leading Southern States in manufacturing and commerce, and in the production of cotton, lumber, naval stores, melons, fruits, and vegetables.

North Georgia produces the finest of wheat and oats. Rice flourishes in the lowlands along the coast; cotton, the leading staple, in the central and southwestern parts of the State; corn grows everywhere. The great pine forests yield valuable timber and naval stores.

The gold mines of this State were considered very rich before gold was found in California, and are still profitably worked. Georgia marble is famous. Coal, iron, limestone, and ma are mined in the northern part of the State.

5. Cities.—Atlanta, the capital and largest city, i point where railroads must pass in coming around the n barrier. This makes it a great railroad and trade cen ranks first in the State in manufactures. A school of tec is located here.

Savannah is the chief seaport, and an important com center. It exports cotton, rice, naval stores, and lumb

Augusta, on the Savannah, and **Columbus,** on the Cha chee, have ample water power and extensive cotton mills. has three colleges, cotton mills, and a large wholesale tra

Rome has an important river trade. **Brunswick** ships lumber, and naval stores. The State University and the State School are at **Athens,** and the Georgia Normal and Industrial is at **Milledgeville.**

Review Topics.—Compare South Carolina with Georgia. Sea i ton. How used? Manufacture of cotton goods. Agricultural produ scribe Columbia. Charleston. What minerals has the State? In what prominent? What duces wheat and oat Cotton? What are products? The mine scribe Savannah. Augusta. Columbus Rome. Brunswick. is the State Univers

XXXIII. FLO ALABAMA, MISSISSIP

1. Florida.— has no mountai is dotted with l lakes and spring

The **Everglades** in South Florida may be described as a great lake with long grass growing from the bottom. The su studded with islands, upon which are dense jungles of tropi and plants.

Florida fronts both on the Gulf of Mexico and on the A It has so mild and delightful a winter climate that thous visitors spend the winter here each year. Its tourists' are among the finest in the world.

The **soil** is adapted to the cultivation of cotton, and rice.

Florida is famous for its oranges and other tropical fru

View of the center of St. Augustine, Fla., showing the [illegible] immense hotels for winter visitors.

An important industry is the cultivation of **early fruits** and **vegetables** for Northern markets. In the southern parts of the State Sisal hemp, cocoanuts, pineapples, and guavas are grown.

The **live oak** abounds here, and the **sponge fisheries** are valuable. The **phosphate deposits** are the richest and largest yet discovered.

Florida is of limestone formation. The southern part is bordered by numerous coral-formed islands called **Keys.**

2. Cities. — **Jacksonville,** the largest city, ships pine lumber, anges, and vegetables, by ter and by rail, to North- n cities.

Tampa, the second city, nks next to New York in e import of tobacco; it nufactures cigars and s steamship lines to Key est, Havana, and other rts. **Pensacola,** the chief y in foreign commerce, s a fine harbor, and ships e lumber, naval stores, d cotton. **Key West,** on one of the ys, manufactures the famous Key est cigars from tobacco grown in Cuba. onge fishing is an important industry.

Tallahassee is the capital. **St. Augustine,** founded by the Spanish in 1565, is the oldest town in the United States.

Making pig-iron in Alabama. First cut shows the mine where the ore is dug. Second is the outside of the furnace, showing the cars by means of which ore, lime, and charcoal are carried to the top of the furnace and dropped in. When heated, the charcoal unites with the impurities in the ore and the pure iron runs down to the bottom of the furnace. Third shows the bottom of the furnace. Every six hours the furnace is opened and the melted iron runs down to the little channels made in the sand, as shown in the picture. Each central channel is called a sow, and the little ones are called pigs; iron cast in this way is called pig-iron.

3. Alabama and Mississippi. — ith the exception of the mountain gion of north Alabama, these two ates belong to the Gulf Plain, which sometimes broken by hills made by the tion of water. Corn and oats are raised for home use. Cotton the great agricultural product. In the southern sections early getables and fruits are grown for Northern markets.

In the southern part of both States are extensive forests of g-leaf pine from which lumber, naval stores, and charcoal are anufactured. Both States have cotton factories and many tton-seed-oil mills.

4. Alabama.—Alabama ranks first in the South and fourth the Union in the production of iron, and fifth in the output of oal. Rich deposits of iron ore, coal, and lime lie near together, nd supply the furnaces, rolling mills, and coke ovens that dot the ineral district. The Alabama and Tombigbee rivers furnish a waterway to the Gulf for the coal, iron, and cotton of the State.

5. Cities.—**Mobile,** the only seaport, exports cotton, lumber, naval stores, and iron. It imports bananas and other tropical fruits.

irmingham, the largest city of the State, is the center of the and iron region, and has coke ovens, furnaces, and rolling s. It manufactures steel rails, engines, boilers, machinery, n gins, and cotton. Many railroads center there.

ontgomery, the capital, is a railroad center and river port. t manufactures fertilizers, cotton, cotton-seed oil, and lumber, nd has a large trade.

Anniston has iron furnaces and cotton factories. **Selma** is an important point for the shipment of cotton. **Huntsville** is a handsome town and manufactures cotton and lumber. The University of Alabama is at **Tuscaloosa,** and the Agricultural and Mechanical College is at **Auburn.**

6. Mississippi.—Mississippi lacks mineral wealth, but is rich in cotton and in forests of hard wood in the Delta, and of yellow pine in the southern hills.

The most important manufactures are lumber, cotton-seed oil and meal, naval stores, and cotton goods.

7. The Mississippi-Yazoo Delta.—There is no richer land in the world than that of the Delta. It is a part of the flood-plain of the Mississippi, and is protected from overflow by embankments called levees, which are built along that river from the bluffs above Vicksburg to the bluffs near the Tennessee line. A bluff just east of the Yazoo river forms the eastern rim of the Delta. The Delta embraces about one-seventh of the State. The cotton grown here ranks next to the sea island cotton in value.

8. Cities.—**Vicksburg,** the chief commercial city, and **Natchez** are both situated on the bluffs of the Mississippi. They are important cotton markets and manufacture lumber and cotton-seed oil.

Meridian, the second city in population, is an important railroad and commercial center. Its leading manufactures are cotton products and fertilizers.

Jackson, the capital, is a great railroad and business center. **Gulfport,** a new seaport with a fine harbor, exports lumber and naval stores to foreign markets. **Columbus, Greenville, Greenwood,** and **Laurel** are cotton-manufacturing centers. **Biloxi** has the largest shrimp fisheries and ranks next to Baltimore in the oyster product. The University of Mississippi is at **Oxford,** the Agricultural and Mechanical College at **Starkville,** and the Industrial Institute and College for Girls at **Columbus.**

Canton, Miss., showing the cars loaded with coal which is used to run the machinery of the ice factory nearby. The ice is being put into the cars to preserve the fruit and vegetables on their way to Northern cities to be sold.

Review Topics.—Describe the surface of Florida. The Everglades. The climate. The soil. What ship-timber abounds? Phosphate deposits? What are the Keys? Describe Jacksonville. Tampa. Pensacola. Key West. Tallahassee. St. Augustine. Describe the surface of Alabama and Mississippi. Climate. Staple production. The minerals of Alabama. The forests. Its industries. Its chief rivers. Mobile. Montgomery. Birmingham. Anniston. Huntsville. Selma and Tuscaloosa. The State University. Mississippi. The forests. The Mississippi-Yazoo Delta. Vicksburg and Natchez. Meridian and other places of trade. The State educational institutions.

XXXIV. LOUISIANA AND ARKANSAS.

1. Louisiana.—Louisiana, so called in honor of Louis XIV. of France, was settled by French and Spanish colonists. The descendants of the former are called French Creoles.

Louisiana was purchased from France in 1803, chiefly to secure for the commerce of the inland States a free outlet to the sea through the Mississippi.

Making sugar in Louisiana. The cane comes down the slide and the juice is crushed out by rollers.

The juice is boiled to a thick syrup in each of these three vessels, called the "triple effect."

2. The depression of the land is one of the marked physical features of this State. From the mouth of the Red river to the Gulf the level of the Mississippi river and its outlets—called bayous (*bī′ooz*)—is higher than that of the adjacent country.

The drainage, therefore, is *from* and not *toward* the watercourses. The people speak of going *up* to the river instead of going *down* to it.

View of a levee in New Orleans. Notice the steamboat on the Mississippi river, the steamships and sailing vessels lying next to the levee. On the levee are cotton, staves, and other merchandise which are to be loaded on the ships. Notice the freight cars on the left.

View on the levee on the Mississippi. The river cannot be seen. The water that you see is called back-water, and a steamboat is bringing men to repair the levee. A road is at the right, and the home of a planter can be seen in the distance.

This depression exposes the country to fearful floods whenever a break occurs in the levee. Such a break is called a *crevasse*.

3. Louisiana is the first of the Southern States in commerce and manufactures. It produces nearly all the cane-sugar raised in the United States, more rice than any other State, and a large amount of cotton.

Centrifugal mills. They revolve rapidly, throwing off molasses through a fine wire netting, leaving dry grains of sugar.

The chief manufactures of Louisiana are sugar, lumber, rice, cottonseed oil, and jute bags.

4. Cities.—**New Orleans** ranks second in the United States in its foreign commerce, and first in the South in population, commerce, and manufactures. It is the greatest market in the world for cotton, and one of the greatest for sugar and rice. It exports chiefly cotton and grain. It imports raw sugar, coffee, tropical fruits, and other merchandise. It has sugar refineries, rice mills, foundries, and other factories.

The levee here is very wide and upon it may be seen bales of cotton, barrels of sugar and rice, sacks of coffee, and boxes of other merchandise ready for shipment. On one side of the levee are wharves where steamships, sailing vessels, and steamboats lie, one after another, for more than five miles; here also are grain elevators and shipyards.

Tulane University and other higher institutions of learning are located here.

Shreveport is an important railroad and trading center. It is the chief distributing point of north Louisiana.

Baton Rouge (*bat′un roozh*), the capital, is an important city. The University of Louisiana is located here. **Alexandria** and **Lake Charles** manufacture cottonseed oil and lumber. **New Iberia** has mills for hulling and cleaning rice.

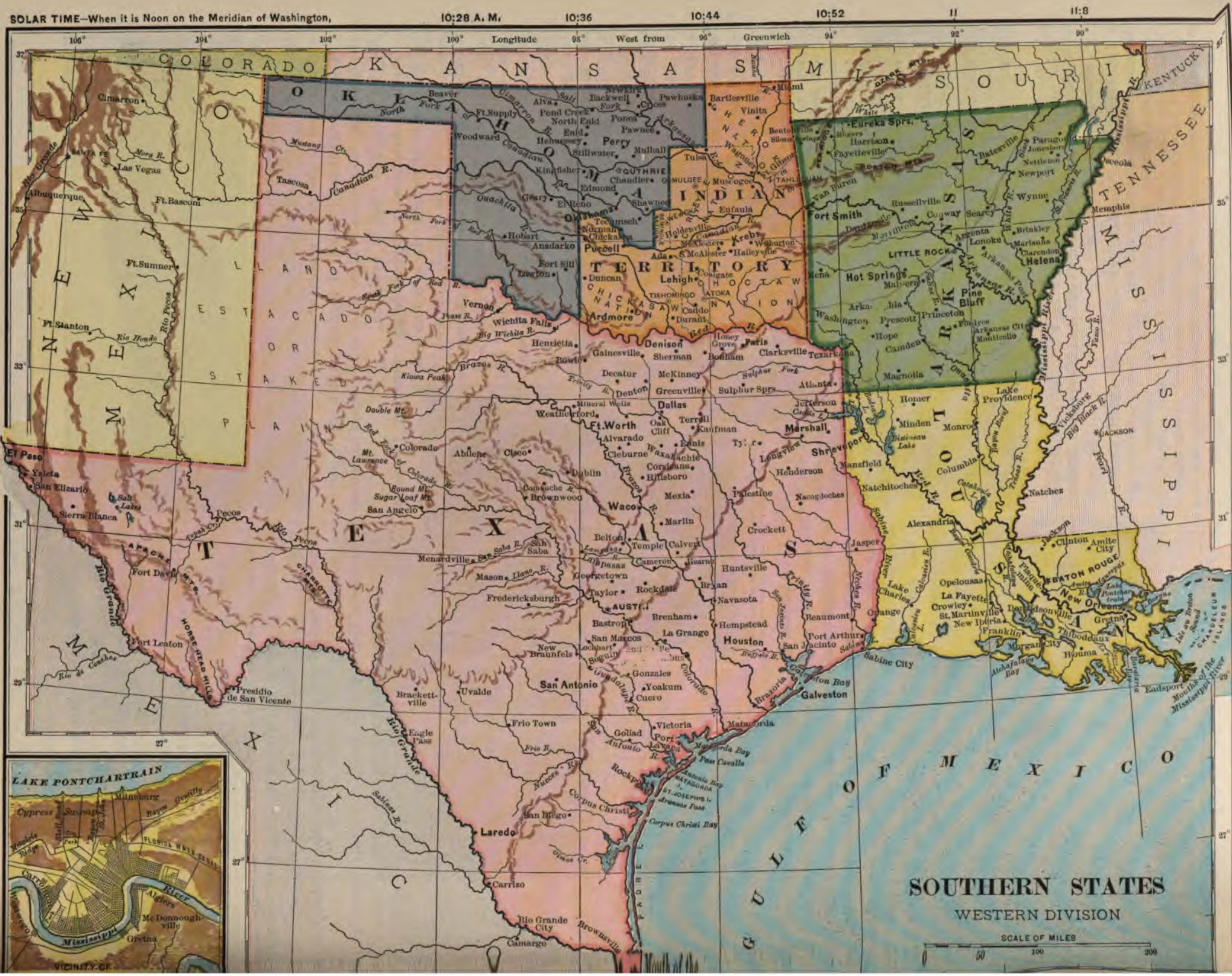
MAP STUDIES.—In which of these States are lakes most numerous? Which has no seacoast? Which has the longest coast line?

Arkansas.—What portion is mountainous? Boundaries. What large river crosses this State? Describe the course of the White River. Name the capital. Describe Helena. Hot Springs. Pine Bluff. Fort Smith.

Louisiana.—What rivers separate Louisiana from Mississippi? What river flows across Louisiana? Into what river does the Washita flow? What river and lake between Louisiana and Texas? What river and bayou enter Grand Lake? Where is Lake Pontchartrain? Grand Lake? Name the bays on the coast. How many mouths has the Mississippi? Describe New Orleans. Shreveport. Baton Rouge.

Indian Territory and Oklahoma.—The southern boundary. What river nearly divides each Territory into two? Name the principal towns.

Texas.—What bounds Texas on the north? On the southwest? What portion is mountainous? Where are the Apache Mountains? The Llano Estacado? What rivers form part of the boundaries? What river flows into Galveston Bay? Describe the Brazos. The Colorado. What river enters Sabine Lake? San Antonio Bay? Corpus Christi Bay? What tributary of the Rio Grande crosses the western part of the State? Name the bays on the coast. The islands. Describe the capital. Galveston. Houston. Dallas. San Antonio. Fort Worth. Waco. Sherman. Denison. Marshall. El Paso.



SOLAR TIME—When it is Noon on the Meridian of Washington,
10:28 A. M.
10:36
10:44
10:52
11
11:8
Longitude West from Greenwich
SOUTHERN STATES
WESTERN DIVISION
SCALE OF MILES
COLORADO
KANSAS
MISSOURI
KENTUCKY
TENNESSEE
MISSISSIPPI
OKLAHOMA
INDIAN TERRITORY
NEW MEXICO
TEXAS
ARKANSAS
LOUISIANA
MEXICO
GULF OF MEXICO
LLANO ESTACADO OR STAKED PLAIN
El Paso
San Antonio
Austin
Dallas
Ft.Worth
Houston
Galveston
Laredo
Waco
Little Rock
Hot Springs
Fort Smith
Shreveport
Baton Rouge
New Orleans
Guthrie
Oklahoma
Santa Fe
Las Vegas
Albuquerque
Natchez
Vicksburg
Jackson
Memphis
LAKE PONTCHARTRAIN
Mississippi River
VICINITY OF

View of the city of Hot Springs, Arkansas.

5. Arkansas.—Arkansas is rich in its productive soil and in its forests and minerals. Agriculture is the principal industry, and the chief products are cotton and corn.

Eastern Arkansas consists of lowlands which are a part of the Mississippi flood-plain. These lands are protected from overflow by levees like those in Louisiana.

Western Arkansas is rugged, being crossed by the ridges of the Ozark Mountains. It is a fine grazing country and is largely devoted to farming and stock raising. **Mining** is also a growing industry. Coal, iron, lead, zinc, and other minerals abound, and there are extensive quarries of sandstone and limestone. Arkansas leads in the production of **bauxite,** a fine clay from which the metal aluminium is obtained. The **oilstone** and **whetstone** quarries are the best in the world.

The seeds are then hulled, and the meat is boiled and placed in immense hydraulic presses. They press out the oil, which is afterward refined.

Making cottonseed oil at Sherman, Tex. The lint is removed from the seed and made into rolls which is sold for batting.

The **hardwood** forests of the State contain the finest bodies of oak, walnut, hickory, and ash timber to be found in the country. The value of the hard wood lumber cut from these forests exceeds that of any other State. In the western part of the State are numerous **hot springs,** celebrated for their medicinal qualities and much resorted to by invalids.

6. Cities.—Little Rock, the capital and chief city, is a center of trade, and manufactures cotton and lumber.

Pine Bluff, an important shipping point on the edge of the Flood Plain, manufactures cars, lumber, and furniture. **Fort Smith** is in the center of the coal regions at the head of navigation on the Arkansas River. **Helena** is an important shipping point for cotton on the Mississippi.

Hot Springs is a progressive, growing city. Here are the famous mineral springs which make it a winter and summer resort. **Eureka Springs** is also a health resort.

Review Topics.—Louisiana; how acquired and settled? What is a crevasse? In what does Louisiana rank first? Where do we get our upholstery moss? Mineral resources. Manufactures. New Orleans. Shreveport. Baton Rouge. Other cities. Name the resources of Arkansas. What is its principal industry? Its chief products? Describe eastern Arkansas. Western Arkansas. The mineral resources. The hot springs. The chief center of trade. Important towns.

XXXV. TEXAS AND OKLAHOMA.

1. Texas.—Texas is the largest State in the Union. It is about thirty-two times the size of Massachusetts. Its industries and transportation facilities have been rapidly developed by the unbounded energy of its people. Texas now has more miles of railway than any other State.

It was once a part of Mexico, but won its independence by the victory at San Jacinto in 1836. In 1845 it was annexed to the United States.

Texas ranks first in the Union in stock raising, first in the production of cotton, and first in the manufacture of cotton products. About one-fourth of our entire cotton crop is grown there. It ranks third in wool growing and third in the production of petroleum.

Southern Texas is coast prairie. Eastern Texas is a timber belt. Next comes the famous "waxy" land west of the Grand Prairie, a grazing region. Beyond the Great Plains ranges of Rocky Mountains, with little rain.

After the oil is pressed out, hard cakes are left about an inch thick. These are ground into cottonseed meal, which is packed into sacks and sold for fertilizer or for food for stock.

Its agricultural products include cotton, corn, oats, other grains, and fruits; rice and sugar cane on the coast prairies, and wheat in the north.

It manufactures lumber, woolen and cotton cloths, leather goods, machinery, and many other articles.

Coal, quicksilver, salt, gypsum, granite, sandstone, lime, marble, iron, and other useful minerals are found.

2. Cities.—Austin, the capital, is a beautiful city.

Dallas is a shipping point for agricultural machinery and supplies, and leads the cities of the South in the manufacture of harness and saddlery.

San Antonio, the oldest and largest city in the State, is the most important business center of western Texas.

Galveston, the chief port, has one of the best harbors

View of the harbor at Galveston, showing the wharves where the raw cotton is piled for export. In the distance can be seen a breakwater built by the Government to protect the

gulf, and is the fourth port in the country. It exports largely cotton, hides, wool, and wheat. **Houston** is a leading railroad and manufacturing center, and the largest cotton market in the State. **Fort Worth** is an important railroad center and has car shops and meat-packing establishments. **Waco,** in the cotton belt, manufactures cotton and woolen goods.

El Paso and **Laredo,** on the Rio Grande, have an important and growing trade with Mexico. **Denison** is a shipping point and **Sherman** has one of the largest cotton-seed-oil mills in the world. **Beaumont** is the center of famous oil-fields, and has rice and lumber mills. **Corsicana** also is noted for petroleum. **Palestine** and **Cleburne** have large railroad shops. The shops of the Frisco lines are at Cleburne, and of the International and Great Northern at Palestine. **Temple** and **Terrell** are growing trade centers.

In the Ouachita Valley, Oklahoma.

3. Oklahoma.—Oklahoma was organized as a territory in 1890 from a part of the Indian Territory, together with adjacent public lands. There was a rush of settlers, and houses were built and cities established in a few days' time. It has a mild climate, and raises some wheat and cotton. In the western part of the State grazing is the chief industry.

Gypsum is by far the most important mineral product, but there are indications of many kinds of minerals in the State.

Oklahoma, Guthrie, the capital, **Perry, El Reno,** and **Enid** are leading towns.

4. Indian Territory.—In 1832 Congress set apart the Indian Territory for peaceable tribes of red men. It is not organized like other territories, but, with some supervision by United States officers, the Indians are allowed to govern themselves.

The Cherokees, Chickasaws, Choctaws, Creeks, and Seminoles are the most highly civilized. They till the soil and raise cattle. They have schools, churches, and publish a paper. **Ardmore, Muscogee,** and **South McAlister** are the largest towns.

Opening a coal mine in Indian Territory.

Review Topics.—How does Texas rank in size? How was it acquired by the United States? For what is it famed? What are some of the products? In what does it lead? What of its wool? Its cotton and wheat lands? Its mineral resources? Describe Austin. Dallas. San Antonio. Galveston. Houston. Fort Worth. Denison. Waco. Brownsville. Laredo. El Paso. Oklahoma.

XXXVI. CENTRAL STATES.

In the famous blue-grass region, Kentucky.

State.	Area in Sqr. Miles	Population, 1900.	Capitals.	Chief Cities and their Population.	
Kentucky	40,400	2,147,174	Frankfort	Louisville	204,731
Ohio	41,060	4,157,545	Columbus	Cincinnati	325,902
Indiana	36,350	2,516,462	Indianapolis	Indianapolis	169,164
Illinois	56,650	4,821,550	Springfield	Chicago	1,698,575
Michigan	58,915	2,420,982	Lansing	Detroit	285,704
Wisconsin	56,040	2,069,042	Madison	Milwaukee	285,315
Missouri	69,415	3,106,665	Jefferson City	St. Louis	575,238
Iowa	56,025	2,231,853	Des Moines	Des Moines	62,139
Minnesota	83,365	1,751,394	St. Paul	Minneapolis	202,718
Kansas	82,080	1,470,495	Topeka	Kansas City	51,418
Nebraska	77,510	1,066,300	Lincoln	Omaha	102,555
North Dakota	70,795	319,146	Bismarck	Fargo	9,589
South Dakota	77,650	401,570	Pierre	Sioux-Falls	10,266

1. Position and Surface.—The Central States are all inland, and occupy nearly the whole of what is called the **Upper Mississippi Valley.**

The **surface** is generally level, or rolling, with a gentle inclination toward the Mississippi, which occupies the line of lowest level from north to south.

The only important elevations are the Black Hills of South Dakota, the hills of Michigan and Minnesota, the Ozark

In the fertile farming section of Illinois.

Mountains, Pilot Knob, and Iron Mountains in Missouri and southern Missouri, and the low mountains in southeastern Kentucky.

2. Prairies.—The most striking feature of these States is their vast prairies. Long ago these were treeless, covered with grass, gay with flowers, and alive with herds of buffaloes. Their soil is usually free from stones, and exceedingly fertile.

Indiana, Illinois, Wisconsin, Iowa, Kansas, Nebraska, Minnesota, and the Dakotas are wholly or largely prairie regions.


SOLAR TIME—When it is Noon on the Meridian of Washington,
11:16 A.M.
11:20
11:24
11:28
11:32
11:36
11:40
11:44
Longitude West from Greenwich
CENTRAL STATES
EASTERN DIVISION
SCALE OF MILES
LAKE MICHIGAN
(Elev. 578 feet.)
LAKE ERIE
(Elev. 565 feet above the sea.)
WISCONSIN
MICHIGAN
ONTARIO
PENNSYLVANIA
IOWA
MISSOURI
ILLINOIS
INDIANA
OHIO
KENTUCKY
WEST VIRGINIA
TENNESSEE
Chicago
Springfield
Indianapolis
Columbus
Frankfort
Cincinnati
Louisville
Longitude West from Washington
VICINITY OF CHICAGO
VICINITY OF CINCINNATI
VICINITY OF LOUISVILLE, KY.

A harvester at work.

3. Rivers.—The Central States are drained by the Mississippi and its tributaries. From all of these States, excepting Michigan, streams flow into the Mississippi, which carries the water to the Gulf of Mexico.

Situated between the two great watersheds of the country, and draining an area of such vast extent, the **Mississippi** receives immense volumes of water. When its eastern tributaries are swollen by heavy rains at the same time that the tributaries from the west, owing to the melting of the snows upon the Rocky Mountains, are discharging unusually large quantities of water, the Mississippi receives two floods at once. It then sometimes overflows its banks and attains the proportions of a sea. In the spring flood of 1867, the Mississippi was estimated to be, at Memphis, 40 miles broad.

The eastern tributaries of the great river, as compared with the western, are shorter, more rapid, and not navigable to so great a distance.

This is because the Mississippi does not occupy the middle of the valley; it is far to the east of the middle, being, below its junction with the **Ohio,** not very far from the most western range of the Appalachians.

4. Climate.—These States have an inland, or continental, climate. In the northern section the winters are long and severe, the summers are short and hot; the southern the winters are milder, and the summers longer.

5. Minerals.—The Central States are rich in minerals. The **coal-fields** of Ohio, Indiana, Illinois, Iowa, Missouri, and Kentucky are among the largest in the world. They embrace an area of many thousand square miles.

Masses of native **copper,** tons in weight, have been quarried out of the mines in the Lake Superior copper region.

Iron is abundant in the Lake Superior region, both in Minnesota, Michigan, and Wisconsin, and also in Ohio, Kentucky, and Missouri. **Lead** and **zinc** abound in Missouri, Kansas, and Wisconsin; **gold** and **silver** in South Dakota.

Michigan produces more salt than any other State except New York. Ohio and Indiana furnish much petroleum.

6. The Central States are the great grain, lumber, and meat-producing region of the country. Potatoes, hay, tobacco, sugar-beets, flax, hemp, and fruits are also important crops. The wool clip in Ohio and Michigan is very great.

Logging on the Menominee river at Menominee, Michigan.

The **manufactures** of these States are enormously valuable and include farming implements, railroad cars, carriages, packed meat, lumber, and tobacco, in all of which this section leads.

The **fisheries** of the Great Lakes are a profitable source of industry in Michigan, Minnesota, and Wisconsin. Whitefish, lake herring, trout, and sturgeon are taken in enormous quantities.

Unloading iron ore from lake steamers at Cleveland. One end of the long steel crane is lowered to the deck; the ore is hoisted and put in cars, which run to the other end of the crane and dump it on the docks.

The **commerce** of the Central States consists chiefly in the sale of flour, beef, pork, lard, machinery, copper, lead, iron, lumber, wheat, corn, and oats.

Many of these products are sold in the manufacturing cities of the Eastern States and to foreign countries, from which these States buy textile goods, boots and shoes, hardware, and various manufactures.

MAP STUDIES.—In which of these States are mountains found? Which border on Lake Michigan? On Lake Erie? On the Ohio? On the Mississippi?

Kentucky.—What mountains separate Kentucky from Virginia? What river north? Northeast? West? Name the principal tributaries of the Ohio flowing through Kentucky. What river enters the Ohio near Newport? What two rivers from Tennessee cross the western part of the State? Where does the Cumberland river rise? Locate Louisville. Covington. Newport. Lexington. Paducah. Henderson. Bowling Green. Frankfort. Winchester. Paris. Ashland. Maysville. Mammoth Cave.

Ohio.—What river separates Ohio from West Virginia? From Kentucky? What lake north? What rivers flow into the Ohio? In what direction does the Maumee river flow? In what part of the State is the capital? Locate Cincinnati. Cleveland. Columbus. Toledo. Dayton. Youngstown. Springfield. Akron. Zanesville. Sandusky. Hamilton. Newark. Mansfield. Portsmouth.

Indiana.—What great lake north? What river separates Indiana from Kentucky? What river forms part of the boundary between Indiana and Illinois? What are the branches of the White river? In what directions does the Wabash flow? What is the capital of the State, and where? Where is Evansville? Fort Wayne? Terre Haute? South Bend? New Albany? Richmond? Lafayette? Logansport? Elkhart? Muncie? Anderson? Vincennes? Bloomington?

Illinois.—What river west? What lake and river east? What river south? Into what does the Illinois flow? Into what does Rock river flow? Where is the Kaskaskia? The Sangamon? The Little Wabash? Where is Lake Peoria? Name the capital. What great city on Lake Michigan? Where is Peoria? Quincy? Joliet? Rockford? Bloomington? Aurora? Decatur? Rock Island? Alton? Cairo?

Routes of Travel.—On what body of water would you travel in going by steamboat from Cincinnati to Cairo? Cairo to Quincy? Cleveland to Fort Wayne? Cincinnati to Wheeling, West Va.? Louisville to Nashville? Terre Haute to New Albany?

The **Mississippi** and its tributaries give to the people of the Central States a natural outlet to the Gulf for their produce. The Great Lakes are inland seas, which furnish, in connection with the St. Lawrence and the canals, water routes to the Atlantic, and thus to Europe.

A vast network of **railroads** covers this section, providing numerous additional highways for trade, and serving, with their eastern and southern connections, to transmit the merchandise of the Central States to the Atlantic seaboard or to the Gulf.

Manufacturing plows at the Avery Works, Louisville, Ky. The first room, at the top of the page, shows the casting room where the melted metal is poured into molds to make the shares and other iron parts of the plow. The second is the wood-working room. The third is a "stocking" or setting-up room, where the different parts are put together.

Among the **commercial** cities are Chicago, St. Louis, Cincinnati, Detroit, Louisville, St. Paul, Minneapolis, Duluth, Omaha, Indianapolis, Milwaukee, and Cleveland.

Review Topics.—Location of the Central States and their capitals. Surface. Elevations. Prairies. What States in the Prairie region? What causes the floods? Compare the eastern and the western tributaries of the Mississippi. The climate. Coal fields. Copper. Iron. Lead. Salt. Agriculture, and manufacturing. Fisheries. The commerce. Natural advantages for commerce. How connected with the Atlantic seaboard? Commercial cities.

XXXVII. KENTUCKY AND OHIO.

1. Kentucky.—Kentucky surpasses every other State in the production of tobacco and hemp, though corn is the most valuable crop. The famous blue-grass region, in the Licking and Kentucky river valleys, is one of the finest grazing districts in the United States. Its horses and cattle are very celebrated. Extensive forests of hard wood and rich deposits of coal and iron are found in Kentucky.

The **Mammoth Cave,** in the central part of the State, is one of the most remarkable caverns in the world. It extends underground for miles, but has never been thoroughly explored. It contains a navigable lake of fresh water. The roofs and walls of its chambers are covered with glistening stalactites. The fish that live in its waters are blind.

2. Cities.—The chief manufacturing and commercial city is **Louisville,** the largest tobacco market in the world. Its manufactures include tobacco, flour, cotton-seed oil, distilled and malt liquors, lumber, and leather. The selling of these makes a large trade.

It is at the falls of the Ohio, to pass which a canal has been constructed capacious enough to admit the largest steamers that ply on the river.

Covington and **Newport,** opposite Cincinnati, manufacture machinery and building materials. **Lexington,** in the midst of the blue-grass country, is a beautiful city. It is a center of the tobacco trade, has extensive manufactures, and is noted for its institutions of learning.

Paducah, near the mouth of the
is an important shipping point f
pork, and grain. **Owensboro**
quantities of tobacco. **Henderso**
ton and lumber mills. **Frankfor**
tal of the State, is an educational
facturing center. **Maysville,** on
is a leading hemp market and ma
flour and lumber.

3. Ohio.—Ohio is the fourth
the Union in population. Th
are largely engaged in manuf
The State ranks first in the ma
of carriages
products,
high in th
tion of steel
tural im
and foods.

The coal mi
ern Ohio ar
ductive, and
leum wells
value to tho
fornia.

Ohio is also a leading agricultural State. Grain, liv
and dairy products are all largely produced. This Sta
high in the production of wool. Tobacco and grapes
tensively cultivated. The Catawba wine is noted.

The State has remarkable commercial advantages.

The **Ohio river** and the **canals** connecting it with Toledo a
land furnish a cheap waterway from the State to the coal,
iron regions of Pennsylvania, West Virginia, and the State
ing on the Great Lakes, and also with the markets of the M
Valley. The Erie Canal and the railways of New York,
vania, and Maryland connect it with the seaboard.

4. Cities.—The largest city in Ohio is **Cleveland**; it
situated on Lake Erie. It has easy access to the coal
of Pennsylvania and to the iron of the Lake Superior
It is therefore noted for the manufacture of iron and st
the refining of oil. Steel ships and machinery of every
made. Meat packing and the brewing of malt liquors a
leading industries.

Cincinnati is the largest and chief commercial and
turing city of the Ohio valley. It has river and railway
tions with all parts of the country. Its foundries and
shops manufacture iron and steel brought through th

Lumber yard and railroad bridge at Cleveland. The tall buildings of the city in background.

from the cities of the smelting region along Lake Erie. Clothing, leather goods, and liquors are the other leading manufactures.

Columbus, the state capital, is centrally situated and has large iron and steel industries. Leather goods and vehicles are next in importance. **Toledo** is an important grain market and has large flouring mills and iron foundries.

Dayton manufactures cash registers, cars, and machinery; **Youngstown,** near the Pennsylvania border, ranks next to Cleveland in the manufacture of iron and steel; **Akron** manufactures rubber tires and elastic goods; **Springfield** and **Canton** are noted for agricultural implements; **Hamilton, Zanesville, Piqua, Tiffin,** and **Newark** are centers for the manufacture of machinery, clay products, and building materials. **Sandusky** has an extensive wine trade and manufactures hardware and lumber.

Making automobile tires at the Diamond Rubber Works, Akron, O. After the rubber is mixed with materials to harden it, it is then passed between steel rollers which press it into sheets, as shown in the first view. The second view shows how the tires are built up by laying strips of rubber together; the tires are then vulcanized by placing them in steam-heated chambers which melt the several parts into one solid piece.

Review Topics.—In what does Kentucky excel? Describe the blue-grass region. What minerals in the State? Describe the Mammoth Cave. How did the early settlers get their crops to market? Describe Louisville. Covington and Newport. Lexington. Frankfort. Paducah. Maysville. Owensboro. Henderson. Population of Ohio. Mineral Products. Agricultural. How is Ohio connected with the Mississippi Valley and the seaboard? Describe Cincinnati. Cleveland. Columbus. Toledo. Other cities.

XXXVIII. INDIANA AND ILLINOIS.

1. **Indiana and Illinois.**—These States are in the prairie region; they have no mountains. Their latitude and climate, their productions and pursuits, are the same. They are among the greatest corn and wheat growing States in the country.

2. **Indiana** is the eighth State of the Union in population, and one of the leading Central States in agriculture, stock-raising, wool-growing, and manufacturing. Most of the trunk lines of railway connecting the eastern ...stern parts of the country cross ...te. This fact helps to promote ...nufacturing and commercial in... s.

... coal-fields, petroleum, and natural gas are found near its southern borders.

The manufacture of wheels at the Studebaker factory, South Bend, Ind. 1. Putting the spokes and felloes together; 2. Welding tires by electricity; 3. Putting the steel boxes into the hubs by hydraulic pressure; 4. The tires are heated white-hot in the furnace and placed on the wheels; the wheel then drops into a tank of water which cools the tire, causing it to contract, binding all parts of the wheel firmly together.

The **Wyandot Cave** rivals the Mammoth Cave in extent and grandeur. The Bedford limestone, found in the same section, has a national reputation for firmness and is a favorite building stone.

3. **Cities.**—The capital of the State is **Indianapolis,** the largest and the most important commercial and manufacturing city. The numerous lines of railway which center here furnish it with an abundance of raw materials for its meat packing, flouring, woodworking, and steel industries.

Indiana has nearly twenty cities of over ten thousand population each, and more than fifty with a population of over five thousand. Most of these towns are important manufacturing and railroad centers.

Evansville is noted for its flour and lumber products. **South Bend** has the largest establishment in the country for the manufacture of vehicles. **Fort Wayne** has large car and machine shops, and slaughtering and meat-packing establishments. **Terre Haute** ranks second in the manufacture of distilled liquors. **Muncie** manufactures iron, steel, and fruit jars; **New Albany,** machinery and leather; **Anderson,** steel, glass, and building materials; **Richmond** and **Lafayette,** agricultural implements. **Kokomo** and **Marion** are in the natural-gas region and manufacture glass. **Michigan City** and **Hammond** are largely engaged in the making of railroad supplies. **Logansport** manufactures machinery and vehicles. **Elwood** and **Vincennes** have iron works. **Elkhart** has paper mills and railroad shops.

4. **Illinois** is now the third State in the Union in population. It is in the prairie region, and has a very fertile soil. Its large crops of corn, oats, and wheat, and its high rank in stock-raising have made it the chief food-producing State. It ranks first in the packing of meat and third in manufacturing. Its coal fields, which underlie nearly two-thirds of the State, have greatly helped its industries and made it next to Pennsylvania in the production of steel. Lead is found and limestone of excellent quality for building purposes.

5. **Cities.**—**Chicago** is the most important commercial center on the Great Lakes, and the second in the country. It is the greatest grain market in the world, and the leading market in the United States for live stock, pork, and lumber.

It receives a large part of the produce of the Central States, and

transmits it to eastern and foreign markets. It receives eastern and foreign goods, and distributes them throughout the northwest. Railways and water routes connect it with every part of the country, and vessels sail direct to foreign ports.

A street corner in Chicago, showing one of the tall steel frame buildings.

The railway trains that enter or leave the city daily number about two thousand, making it the greatest railroad center in the world.

Grain is brought to Chicago in bulk, and raised into elevator warehouses by endless chains with buckets attached. It is then discharged through spouts into boats or cars.

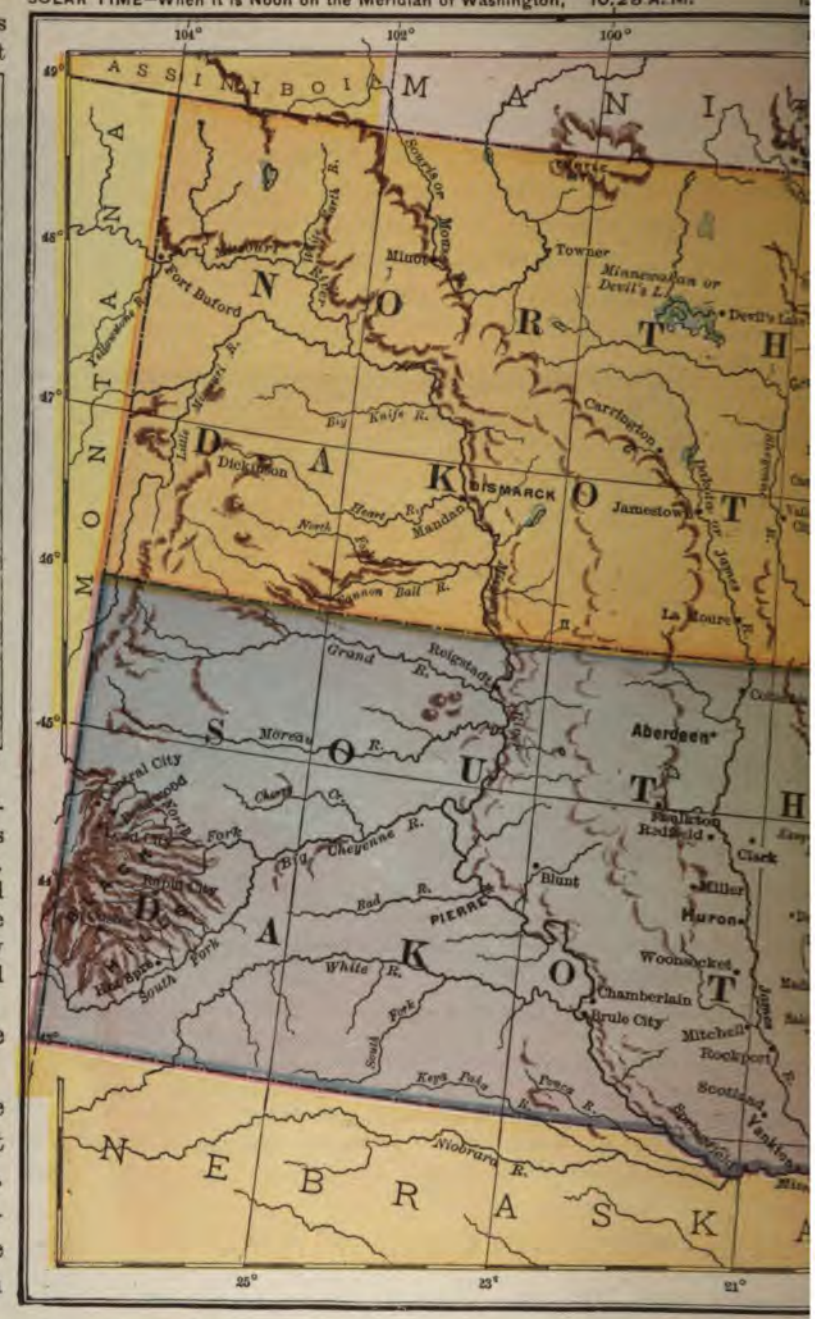
In the value of its **manufactures** Chicago ranks next to New York. Its facilities for transportation by way of the lakes bring to it the iron, lumber, and fuel needed for its great industry, and have made it the first city in its lumber and furniture products, and the second in its output of iron and steel. It is connected also by canal with the Mississippi river system. This, and the water route by way of the Great Lakes and the Erie Canal, give it cheap transportation to both the Atlantic and Gulf ports. It is the seat of the **University of Chicago,** one of the most richly endowed educational institutions in the United States.

Springfield, the capital, is in the midst of a productive country, and the center of an active trade.

Peoria, the second city in the State, leads in the manufacture of distilled liquors. It is also an important market for grain and farming implements. **East St. Louis,** on the opposite side of the Mississippi from St. Louis, is noted as a railway center and as a place for the transfer of freight between eastern and western lines. It has large meat-packing establishments, machine and car shops. **Joliet,** on the Chicago and Illinois Canal, manufactures iron, steel, machinery, and building materials.

The meat industry in Chicago. 1. The great stockyards where cattle are brought on trains from the West. 2. Cold storage room of a great packing house, where beef is hung awaiting shipment. The temperature of this room is at all times near freezing point. 3. Stuffing sausages in sausage department. 4. Washing butterine preparatory to making oleomargarine.

Besides these larger towns, Illinois has about twenty others with a population of over ten thousand. Many of these are engaged in the manufacture of farm machinery, in which Illinois leads all the States. Among these are **Decatur, Springfield, Rockford,** and **Peoria. Quincy** is an important trade-



center and has large foundries and lumber ington manufacture iron ware, clothing, and products and watches. **Evanston** is the seat large glass a car shops.

Rock Isla ter, situated fine bridges and large ir

Review Topics.—In what region do Indiana and Illinois lie? Describe their surface. Rank of Indiana. Population. Agriculture and stock raising. Its coal fields. Describe Indianapolis. Evansville. What is said of other places? How does Illinois rank in population? In what does it surpass other States? scribe Chicago. Its distributing business. Its trains. Eleva some manufacturing industry of each.

ents. **Aurora** and **Bloom-** **Elgin** is noted for dairy niversity. **Belleville** has **nville** has woolen mills and lows and wagons.

oad and manufacturing cen- site Davenport, Iowa. Two t has a government arsenal

ustries? Mineral resources. De- er important cities of Illinois and

MAP STUDIES.—Which of the Great Lakes on the northern boundary? Which State is bordered on the south by Lake Superior? Which States are bordered by the Mississippi? Which State the greatest number of lakes? How are lakes Superior and Huron connected? Lakes Michigan and Huron? Lake Huron and Lake Erie?

Michigan.—How is Michigan divided? What portion is mountainous? What lake bounds the southern peninsula? What three lakes on the east? What bays on the northern peninsula? Where is Green Bay? Isle Royale? Name the capital. How is it situated? Where is Detroit? Grand Rapids? Saginaw? Bay City? Muskegon? Jackson? Kalamazoo? Port Huron? Battle Creek?

Wisconsin.—Trace the Wisconsin River. The Chippewa. What river forms part of the northeastern boundary? In what direction does Fox River flow? What lake does it drain? Where is Madison? Milwaukee? La Crosse? Janesville? Oshkosh? Racine? Eau Claire? Sheboygan? Ashland? Superior? Appleton? Watertown?

Minnesota.—What ridge crosses the northern part of this State? What lakes and river form a part of the northern boundary? What river separates Minnesota from North Dakota? Of what is the Red River the outlet? How do the waters of Big Stone Lake reach the sea? Trace the Minnesota. Where does the Mississippi rise? What lake does it drain? What is the capital? Locate Minneapolis, Duluth, Winona, Stillwater, Brainerd, Red Wing.

North and South Dakota.—What plateau traverses both States? (See physical map of United States.) What large river on the eastern side of the dividing plateau? On the western? What tributary of the Missouri has its sources in the Black Hills? What is the capital of North Dakota? Of South Dakota? Where is Fargo? Grand Forks? The Black Hills? Yankton? Sioux Falls?

Routes of Travel.—How would you go by water from Chicago to Detroit? Milwaukee to Duluth? Milwaukee to Fond du Lac? Isle Royale to Lake Erie?

XXXIX. MICHIGAN, WISCONSIN, MINNESOTA, NORTH AND SOUTH DAKOTA.

1. Michigan.—Michigan is divided into two peninsulas: a northern and a southern. It is nearly surrounded by three of the Great Lakes; hence its climate is milder than that of any other inland State in the same latitude.

The **Pictured Rocks** on the southern shore of Lake Superior are colored as though painted. They are cliffs of sandstone.

This State has great **mineral wealth.**

The central and northern parts supply about one-third of the iron and copper ore and salt produced in the United States. The mines of native copper on the shores of Lake Superior are the richest in the world, and make Michigan the second among the States in the production of this metal. There are also large deposits of coal in the southern peninsula. Gypsum also is found in large amounts. It is used as a fertilizer or is made into plaster of Paris.

Michigan is a **rich agricultural country.**

The mild climate of the western shore of the southern peninsula makes it one of the leading fruit regions. Corn, oats, potatoes, and hay are leading crops. In the production of beet sugar and potatoes Michigan is second among the States. It also ranks high in live stock, and in the production of wool and dairy products. Michigan formerly was first in the production of pine lumber, but the forests have been largely cut away, and it is now second to Wisconsin. Great quantities of hard wood lumber are brought into the State for the manufacture of furniture, in which Michigan ranks next to New York and Illinois.

Three steps in the manufacture of furniture at Grand Rapids. In the first room thin layers of mahogany or other cabine woods, called veneer, are glued to the parts which are to be made into furniture. The parts are then put under heavy pressure to make the veneer adhere firmly.

The second view shows he cabinet room. Here all the parts are smoothly and accurately finished and are turned over to cabinet-makers to be put together. The strength and durability of furniture depends upon the manner in which this work is done.

This view shows the trimming room. Here doors are hung, drawers fitted, mirrors inserted, and all fittings, such as handles and knobs, are put on.

The **lake shore** of Michigan is more than a thousand miles in length—greater than the seacoast of any State except Florida. The lake trade is therefore very large. Ores and lumber, from the Lake Superior shores, and wheat and flour from the ports of Wisconsin and Minnesota, are carried to the various ports along the lakes. The ship canal, around the Falls of St. Mary or **The Soo,** connecting Lake Superior and Lake Huron, carries more freight than any other canal in the world. Ores, grain and lumber are the chief articles carried.

2. Cities.—**Detroit** is the largest city and the most important lake port in the State. Its chief manufactures are iron and steel, machinery, tobacco, drugs, and paint. It leads in the manufacture and sale of automobiles, and has salt works and wood-working plants of every description. **Lansing** is the capital of the State and has iron works and machine shops.

Grand Rapids, the second city in size, has over thirty factories for the making of furniture. **Saginaw, Muskegon, Manistee, Bay City,** and **Alpena** are all engaged in the manufacture of lumber and lumber products. Ships are built at Bay City and **Port Huron. Battle Creek** manufactures agricultural machinery and cars. **Menominee** has the largest beet-sugar factory in the United States. **Kalamazoo** is noted for its celery gardens; **Flint** for its vehicles; **Adrian** for wire fencing, and both Adrian and **Jackson** for piano and organ works. **Ann Arbor** is the seat of Michigan University, one of the largest in the United States.

A celery bed at Kalamazoo, Mich.

Ispheming is the center of a rich iron ore district.

The region at the head of Saginaw Bay has numerous salt wells, from the water of which salt is manufactured at Saginaw and Bay City.

3. Wisconsin.—Southern Wisconsin consists of rolling prairies of very rich soil. Oats, corn, barley, hay, potatoes, and tobacco are the principal crops. Stock raising, dairy farming, and fruit growing are large and increasing interests and furnish a large trade.

The northern part of the State has extensive forests of pine, hemlock, spruce, and hard wood, which make it the leading State in lumber products.

The manufacture of flour is an immense industry. Much wheat is imported from neighboring States for the purpose. The manufacture of cheese and butter, tanning and finishing leather, slaughtering and meat packing, are important industries.

Wisconsin has colder winters than Michigan, as the west and southwest winds sweep across the land instead of over water.

Vast quantities of zinc and iron, and some lead, are mined.

4. Cities.—The largest city in the State is **Milwaukee,** the chief commercial and manufacturing center, and one of the

Works of the Case Threshing-Machine Company at Racine. Notice the engines used to run the machines and the cases of goods directed to Buenos Aires.

leading grain and lumber markets in the world. It has extensive manufactures of iron, steel, and machinery, malt liquors, leather, and flour. **Superior,** the second city in size, is, next to Minneapolis, the largest flour-milling center in the country. It also ships large amounts of wheat, iron ore, and lumber, and receives coal for reshipment. **Racine,** the third city, has a large lake trade and leads the world in the manufacture of threshing machines.

Madison, the capital of the State, is the seat of the State University, and manufactures vehicles and farming implements. Extensive plants for the manufacture of lumber are found at **Fond du Lac, Eau Claire, La Crosse, Marinette, Oshkosh, Wausau,** and other cities. **Manitowoc** is especially noted for school furniture and settees; **Appleton, Eau Claire,** and **Marinette** for pulp paper; **Beloit** for agricultural implements; **Kenosha** for fishing industries; **Sheboygan** for coal and salt, and **Green Bay** for flour barrels. Many cities bordering the lakes have large shipping interests, and are growing centers of manufacture.

Four steps in the manufacture of leather. The first view shows the process of removing the hair from the hides and trimming the sinews, flesh, and other useless parts from them. The second view shows the tanning yard. The hides, after having the hair removed, are hung into vats containing the extract of hemlock bark, called tannin. At certain intervals, the hides are transferred to other tanks containing stronger and stronger solutions of tannin, until they are changed into leather. This process requires from two to five months, depending upon the kind of leather desired.

5. The Great Lakes border chiefly on the Central States, and separate them from the Dominion of Canada.

They are situated upon three **terraces,** one above the other, so that in going from the sea to Lake Superior, we ascend by three steps. The first step lands us on the Lake Ontario terrace; the second above the Falls of Niagara, on a level with the three middle lakes—Huron, Michigan, and Erie; the third step lands us above Sault Ste. Marie, on a level with Lake Superior, at least 600 feet higher than the sea.

To enable vessels to descend from Lake Superior to the level of the St. Lawrence and the ocean, **canals** have been constructed around the Falls of St. Mary and Niagara. Passing around the Falls of Niagara by the Welland Canal, vessels sail from lake ports to Liverpool.

The **commerce** on the lakes is very great; it consists chiefly in the shipment to foreign and domestic ports of coal, iron, lumber, grain, flour, and meat. It employs not less than five thousand steamers and other vessels.

6. Minnesota.—Minnesota is crossed by the ridge, or "Height of Land," which separates the valley of the Mississippi from the northern slope of the Great Central Plain.

On this elevation, both the Mississippi and the Red river of the North take their rise, the one flowing south and the other north. The crest of the "Height of Land" is crowned with lakes of clear water. **Itasca,** one of these, with its tributaries, is the source of the Mississippi.

The Falls of St. Anthony, on the upper Mississippi, are noted for their immense water-power.

The harbor of Duluth. The dark strip in the upper part of the picture is a narrow neck of land seven miles long, which forms the outer p otection to the harbor. On it are thousands of summer homes, and a railroad traverses the entire length.

The summers of Minnesota are delightful; the winters are severe, but uniform.

Minnesota is the leading **wheat** and **flax** growing State, and stands high in the production of **oats.**

Much timber is obtained from the forests along the upper Mississippi.

Minnesota stands first in the Union in the manufacture of flour, third in lumber and linseed oil, and produces more iron than any other State.

7. Cities.—Minneapolis, the largest city in the State, and **St. Paul,** the capital and second in size, are built side by side near the falls of St. Anthony, at the head of navigation on the Mississippi. Though under separate city governments, they form one great commercial center. Minneapolis manufactures more flour and lumber than any other city in the world. St. Paul is the shipping and distributing point for the entire surrounding region. It is a great railway center and is at the terminus of steamboat navigation. It ships vast amounts of flour and lumber, and receives supplies of every kind for the farming and lumbering districts. **Duluth,** the third city, stands on the western extremity of Lake Superior, on the opposite side of the harbor from the city of Superior. It is the principal shipping point for the wheat of the Red river prairies of Minnesota. It also ships large amounts of iron and lumber.

The third view shows the shaving machines. These machines remove the roughness and unevenness of the flesh side of the skins, making them as smooth as they are by nature on the grain or hair side. The fourth view shows the setting room. Here the skins are spread out on tables and are "slicked" or smoothed by means of stone or an instrument with a blunt blade. By this means the skins are made smooth and of uniform thickness. The final operation, which is not shown in the pictures, consists in giving a finish to the surface of the leather by means of varnishes, dyes, or other finishing liquids.

It has an excellent harbor made by a natural breakwater, as shown in the picture at the top of the page.

Winona has a large shipping trade in lumber and wheat, and manu-

factures lumber into various forms, of which farm wagons and agricultural machinery are the chief. The preparation of flax fiber is also important. **Stillwater** is engaged in the manufacture of lumber as well as binding twine, boots and shoes, and steamboat and farm machinery. **Mankato** has flour mills, stone and cement industries, and iron foundries.

8. North and South Dakota.—North and South Dakota are watered by the upper Missouri, the Red river of the North, and their tributaries. In soil and productions they resemble Minnesota. Stock raising is important in both States.

9. North Dakota.—The principal industry of the State is agriculture, and wheat, oats, barley, and flax are the chief grains grown. North Dakota ranks second among the States in the production of spring wheat, and first in flaxseed.

The western half of the State is underlaid with vast beds of lignite, a low grade of coal. Fine pottery clays are known to exist.

Cities.—**Bismarck** is the capital and a distributing point of supplies for army posts and Indian agencies. **Fargo,** the largest city, has large packing industries, manufactures machinery, and is the second largest distributing point in the United States for farm machinery. **Grand Forks** manufactures boilers, flour, and lumber. **Jamestown** and **Valley City** are in the wheat section and have grain elevators. **Grafton** is a growing and prosperous town, and a railroad center.

The second picture shows a bolting or sifting room where the flour is passed through sieves made of wire cloth, which gradually remove all the bran and grit, leaving only the fine white flour. These processes of grinding and bolting are repeated five or six times.

The last bolting room. Here the flour passes through sieves made of the finest silk, which allow only the fine white flour to pass.

A packing room. The flour has now reached the bottom of the mill. On each floor it has undergone some part of the manufacturing process. Here it is packed by machinery into barrels and bags and is ready for shipment.

10. South Dakota.—The grain productions of South Dakota are the same as those of North Dakota, but include also the finest of corn. The State ranks third in flaxseed, fourth in wheat, and high in beef cattle. Dairying is an important industry.

The only elevations in the State are the Black Hills. Here are very rich gold and silver mines that are extensively worked, the State ranking fourth in gold. Gypsum, mica, petroleum, natural gas, and fine building stones abound in the State. The eastern part of the State has many artesian wells which supply not only water for domestic and agricultural purposes, but power for mills and factories. There is considerable flour milling and cheese and butter making in the State.

The manufacture of flour at Minneapolis. The wheat is first raised by elevators to the top of the mill, which is usually a building from eight to ten stories in height. After the grain is separated from chaff and seeds, it is thoroughly scoured and prepared for grinding. The first picture shows a grinding room, where the grain is passed between steel or porcelain rollers.

Cities.—**Sioux Falls,** the largest city, manufactures agricultural implements, windmills, and other farming utensils. **Pierre** is the capital and is the largest center of the State for handling live stock. **Lead City,** situated in the Black Hills region, has one of the largest gold mines in the world. The extraction of this metal from the ore and the manufacture of jewelry are the principal industries. **Yankton, Huron, Mitchell,** and **Aberdeen** are in the wheat-growing section, and have grain elevators and flour mills. Aberdeen is supplied with water and power from flowing artesian wells. **Vermillion** is the seat of the State University; and **Brookings,** of an agricultural college.

Review Topics.—Divisions of Michigan. Climate. Mineral resources. Lumber Product. Lake shore. Detroit. Lansing. Grand Rapids. Bay City. Saginaw. Muskegon. Escanaba. Ann Arbor. Name other places. Describe the surface of Wisconsin. Compare its climate with that of Michigan. Mineral resources. Resemblance to Michigan. Leading products. Describe Madison. Milwaukee. Name other thriving places. Oshkosh. Racine. Upon what three terraces do the Great Lakes lie? Height of Lake Superior terrace. How many vessels descend from this height? Describe the commerce of the Great Lakes. What elevation in Minnesota? What rivers rise upon the Height of Land? Direction of flow. Waterfalls. Climate. Rank as a wheat growing State. The lumber trade. Minneapolis. St. Paul. Duluth. Winona. Stillwater. How are the Dakotas like Minnesota? Their chief crops. The chief industries. Chief towns in North Dakota. In South Dakota. Minerals in South Dakota?

MAP STUDIES.—Which of these States is mountainous? Which ones border on the Mississippi? On the Missouri? What river partly bounds them all?

Iowa.—What river separates Iowa from Wisconsin and Illinois? From Dakota? From Nebraska? In what direction do the tributaries of the Mississippi in this State flow? What are the chief branches of the Missouri in Iowa? What cities are on the Mississippi river?

Missouri.—What mountains in southern Missouri? What river forms the eastern boundary? Part of the western boundary? Where does the Osage enter the Missouri? What river joins the Missouri at Kansas City? What is the capital?

Kansas.—Into what does the Kansas river flow? What river traverses the southwestern part of the State? What great river forms part of the northeastern boundary? What part of the State has the most towns? What is the capital?

Nebraska.—What river forms the eastern boundary? What is the general slope of the country? What river crosses the State? In what part of the State are most of the towns? What and where is the capital?

Routes of Travel.—How would you go by steamboat from St. Louis to Sioux City? From Dubuque to Cairo? From Minneapolis to Chicago? From Bismarck to Bay City?

SOLAR TIME—When it is Noon on the Meridian of Washington,

10:36 A. M. 10:44 10:52 11 11:8

Longitude West from Greenwich

CENTRAL STATES

VICINITY OF ST. LOUIS
Scale, 15 Miles = 1 inch

XL. MISSOURI, IOWA, KANSAS, AND NEBRASKA.

1. Missouri and Iowa.—The climate, soil, and production of these States correspond to those of Kentucky, Ohio, and Illinois. Immense crops of grain and large numbers of cattle, hogs, and sheep are raised in Iowa and northern Missouri.

Views showing the manufacture of plug tobacco at the Liggett & Myers-Drummond factory, St. Louis. The leaves are stripped from the stalks and fed into the upright pneumatic pipes, which carry them into another building.

The leaves are stripped and a solution of licorice and weighed into packages of uniform size. They are then made into plugs by hand.

2. Missouri is the most populous State west of the Mississippi. North of the Missouri and Osage rivers is a prairie country. South of these rivers it is hilly and rugged. The southern section has considerable mineral wealth, producing zinc, lead, and much coal. In the production of lead and zinc ores Missouri ranks first among the States. Corn is the leading farm crop, the State ranking fourth in its production. Missouri mules rank first in quality and bring the highest prices.

Other important products are wheat, tobacco, wool, potatoes, and hay. Vineyards and orchards abound and excellent wines are produced.

Missouri is an important manufacturing State and ranks first in the manufacture of chewing and smoking tobacco and snuff. It ranks third in packed meats.

3. Cities.—St. Louis, as its name implies, was first settled by the French. It is the largest city in the Mississippi Valley and the fourth in size in the United States. It is also the most important commercial center west of the Mississippi, receiving and distributing the products of both the East and West.

Its **situation** at the meeting of two great rivers in a region embracing thousands of square miles of fertile land makes it the center of a vast trade. It is also the fourth city of the country in the value of its manufactures, the chief of these being tobacco products, malt liquors, packed meats, machinery, clothing, cars, and flour. Many of these products are sent by water to New Orleans and thence to foreign countries. Railways also connect St. Louis with the Atlantic, Pacific, and Gulf ports and carry the larger part of its trade.

A street in St. Louis. Notice the elevated railway structure.

Kansas City, on the Missouri river, is the second city of the State and an important railroad and commercial center. It is the second live-stock market in the world. It is continuous with Kansas City in Kansas, the middle of a street being the dividing line. Its manufactures consist largely of flour and building material. **St. Joseph,** the third city, is the center of trade for northwestern Missouri. It is in a coal and natural gas region, has large meat-packing establishments, and ranks first in the State in the manufacture of saddlery and harness.

Joplin is the leading lead and zinc region and manufactures the paint called white lead. It also has machine shops and flour mills. **Springfield** manufactures flour and vehicles. **Sedalia** is a railway center and has extensive car shops and clothing factories. **Hannibal** has railroad shops, cigar factories, and flouring mills. **Jefferson City,** the capital, is beautifully located on the Missouri.

The plugs, after being partially pressed by hand, are here put into hydraulic presses and subjected to a pressure of several tons. This gives them a permanent form. The foreground of the picture shows the cases into which the plugs are packed.

4. Iowa consists mainly in rolling prairies which are exceedingly fertile. It produces more corn, oats, and hogs than any other State, and ranks high also in other kinds of grain and live stock. Agriculture, slaughtering, and meat packing are the largest industries. The making of butter, cheese, and condensed milk, and the manufacture of flour and lumber are next in importance.

A nailing machine. The cases of tobacco are put up in blocks of ten.

A great many **pearl buttons** are made from the shell of the freshwater mussel. Bituminous coal is the only important mineral product, Iowa ranking first in its production among the States west of the Mississippi.

5. Cities.—Des Moines, the capital and largest city, is in the midst of rich coal fields. It is the chief cattle and grain market in the State, manufactures medicines and flour, and is a printing and publishing center. **Dubuque,** the second city, has lumber mills, and manufactures clothing and vehicles. **Sioux City** is on the Missouri river, at the junction of important railroads; it is a milling center and has other important manufacturing industries. **Davenport** is well located on the Mississippi near the rapids, which furnish great water power. It is a grain market, manufactures machinery, has meat-packing establishments, manufactures tobacco products, and refines sugar.

Cedar Rapids has flour and furniture mills; **Burlington,** marble works and machine shops; **Council Bluffs,** car and carriage factories. **Clinton,** planing mills, carriage and furniture factories. **Ottumwa** is engaged in meat packing and in the manufacture of

farming tools. **Waterloo** manufactures dairy machinery and gasoline engines. **Muscatine** manufactures flour and building material. **Fort Dodge,** building materials and woodenware. **Keokuk** has breweries, stove foundries, and flour and lumber mills. **Marshalltown** is a shipping and distributing center.

Kansas and Nebraska.—The eastern portions of these es consist of rolling prairie. The western parts, having a climate, are valuable grazing lands. Immense numbers of e, horses, and sheep are raised.

th these States are scantily supplied with timber. Millions of trees have therefore been planted. They grow with great rapidity.

Kansas.—The eastern part of Kansas having a mild and t climate, the soil is exceedingly fertile and enormous crops rn, wheat, flax, alfalfa, sorghum, and millet are cultivated. e numbers of hogs are raised.

posits of zinc, lead, gypsum, salt, and coal abound, and all argely worked. The coal beds underlie twenty counties in eastern part of the State. Vast deposits of petroleum and ral gas have been discovered.

ties.—**Kansas City,** lying across the State line from Kansas Mo., is the third largest meat-packing center in the country. so manufactures flour and is a large market for agricultural hinery. **Topeka,** the capital, is one of the most beautiful and thy cities in the United State. It is a railroad center and important car shops, flouring mills, and packing houses.

eavenworth, on the Missouri, is an important military post. It is in the coal-mining region and has important machine shops and foundries. **Wichita** lies on the borders of the agricultural and stock-raising belts. It is a leading shipping center for live stock. **Atchison** is a shipping point for flour, grain, and stock. **Fort Scott,** in the bituminous coal regions, manufactures ironware. **Pittsburg** and **Galena** are centers for mining and extracting lead and zinc. **Lawrence** is a manufacturing town.

Dipping cattle in petroleum in Nebraska.

. **Nebraska.**—The eastern part of this State, where there is ty of rain, produces enormous crops of corn, wheat, oats, and lfa. Hogs are raised in the corn belt. Dairying and fruit ing are important industries. The drier western parts of the te are well adapted to grazing.

he surface of Nebraska slopes eastward and is drained by the p, muddy Missouri, whose most important tributaries in the te are the Niobrara, the Platte, and the Republican rivers. se streams have broad, sandy bottom-lands, and are fed by usands of springs. The Republican and the Platte lose much heir water during the summer months.

he extreme western part of the State is occupied by the **mesa** and **butte** region, and in the extreme northwest corner, by the **Bad Lands.**

In these regions the rocky land has been worn by running water into jagged and irregular forms, and is unfit for agriculture or grazing. A *mesa*, or *table*, is a flat-topped hill; a *butte* is a small mesa standing alone.

The chief industries are slaughtering and meat packing, and the making of flour, cheese, butter, and condensed milk.

9. Cities.—**Omaha** is the largest city and chief trading center. It is a center for many railroads, and is therefore a shipping point

Reaping sowed corn for fodder in Nebraska.

for the products of the surrounding country and a distributing center for supplies. **South Omaha,** a few miles away, is the second largest meat-packing center in the United States. **Lincoln,** the capital city, is the chief educational city. It is the seat of the **State University** and three other colleges, and has the largest wholesale trade in the southeastern part of the State.

Review Topics.—Compare Missouri and Iowa. Population of Missouri. Surface. Coal beds. Mineral resources. Leading agricultural products. St. Louis. Its situation. Manufactures. Kansas City. St. Joseph. Jefferson City. Other important places. The surface of Iowa. Minerals. In what is Iowa a leading State? Manufactures. Coal. Des Moines. Dubuque. Sioux City. Other places of importance. Eastern Kansas and Nebraska. Western. The climate of Kansas. Soil. Leading productions. Value as a grazing country. Minerals. Topeka. Kansas City. Other important places. Eastern Nebraska. Western. The climate. Productions. The Missouri and tributaries. The chief manufactures. Omaha. Lincoln.

ROCKY MOUNTAIN AND PACIFIC STATES AND TERRITORIES.

This section comprises three divisions: the **Rocky Mountain** region on the east; the **Plateau** region in the center; and the **Coast** region.

State or Territory.	Area in Sq. Miles.	Population, 1900.	Capitals.	Chief Cities and their Population.
New Mexico.....	122,580	195,310	Santa Fé	Albuquerque .. 6,238
Colorado	103,925	539,700	Denver.....	Denver 133,859
Wyoming	97,890	92,531	Cheyenne.....	Cheyenne 14,087
Montana	146,080	243,329	Helena.....	Butte..... 30,470
Nevada.....	110,700	42,335	Carson City...	Reno 4,500
Arizona	113,020	122,931	Phœnix	Tucson..... 7,531
Utah.....	84,970	276,749	Salt Lake City.	Salt Lake City. 53,531
Idaho.....	84,800	161,772	Boisé City....	Boisé City..... 5,957
California	158,360	1,485,053	Sacramento...	San Francisco.342,782
Oregon.....	96,030	413,536	Salem	Portland..... 90,426
Washington	69,180	518,103	Olympia.....	Seattle..... 80,671
Alaska	590,884	63,592	Juneau.....	Nome..... 12,486

XLI. ROCKY MOUNTAIN REGION.

1. This region embraces the States of **Colorado, Wyoming,** and **Montana,** and **New Mexico,** a territory.

2. Surface.—It is the most mountainous portion of the country. It extends on both sides of the Rocky Mountains, and includes the most elevated portions of the **Great Plains,** which stretch along the eastern base of the mountains.

Its general elevation is about 5,000 or 6,000 feet above the sea level. Scores of its peaks are from 12,000 to 14,000 feet high. These mountains form the **loftiest watershed** in the United States.

3. Rivers.—Here are the sources of all the great rivers which flow eastwardly into the Mississippi, as well as the largest streams that flow into the Pacific.

View of the Rocky Mountains and Pike's Peak, from the entrance to the Garden of the Gods, near Colorado Springs.

The most important are the **Missouri,** the **Yellowstone,** the **Platte,** and the **Arkansas** on the east, and the **Columbia** and **Colorado** on the west.

On the peaks and in the gorges of the mountains are lodged immense quantities of snow. The melting of this snow in warm weather feeds the rivers on each slope, and prevents them from running dry in summer.

4. Irrigation.—Descending from a great elevation, the waters of the rivers are readily applied to the purposes of artificial irrigation.

This is necessary throughout the Rocky Mountain region, owing to the very scanty rainfall. Water is led or pumped from the upper courses of rivers into reservoirs, from which it is piped to channels cut through the fields of growing crops. The fields are flooded from three to five times during the growth of the crop.

5. Climate.—The climate is remarkably dry and bracing.

Mount Sopris, Colorado, and the valley of Roaring Fork.—A ranch may be seen on the left of the picture.

6. Resources.—This region possesses vast mineral wealth; mining is the most important occupation of the people. The Great Plains are the chief grazing district of the continent.

In summer large areas of them are covered with grass, which becomes self-made hay.

7. New Mexico was formerly a part of Mexico and was settled by emigrants from that country. Many of the people speak Spanish. There are many Indian villages in the State, consisting of pueblos; that is, large buildings several stories high, made of sun-dried bricks. The stories are arranged in terraces, and the rooms are entered by ladders from the roof or from the ground.

The **leading industries** of the State are stock raising and **mining.** Copper and lead are smelted, coal is abundant, and there are numerous gold and silver mines.

New Mexico lies in a region of scanty rainfall, but wherever water is obtainable for irrigation the soil is found to be fertile and very productive of corn, wheat, and fruits. Cattle raising is growing, and the culture of grapes and fruits are important industries. Agriculture is growing in importance.

8. C

Santa capital, feet ab sea level founded Spanis 1582 on of a pu lage, an second city i United States. The houses are chiefly of adobe (sun-dried **Albuquerque,** the largest city, is in a fruit-growing reg is at a junction of railroads and the most important center. It is the seat of the **University of New Mexico.**

Las Vegas has become noted as a health resort on acc

MAP STUDIES.—What States and Territory are crossed by the Rocky Mountains? By the Cascade Mountains? By the Sierra Nevada? Where do the Green, White, and other tributaries of the Colorado rise? What States are separated by the Columbia? Into what does this river flow? Through what range does it break?

New Mexico.—What rivers traverse New Mexico? In what direction do they flow? Where is the capital?

Colorado.—Where is Pike's Peak? North Park? Middle? South? San Luis? In what direction do the North and South Platte flow? The Arkansas? Rio Grande? Grand? Where is the capital?

Wyoming.—Where are the Wind River Mountains? The Sweet Water? Big Horn? Black Hills? Where is Fremont's Peak? The National Park? What rivers rise in this park? What lake in it? What and where is the capital?

Montana.—What range separates Montana from Idaho? What lake in the northwestern part? What two rivers traverse this State in an easterly direction? What river flows westerly into the Columbia? What Indian tribes in Montana? What and where is the capital?

Nevada.—What is the longest river in Nevada? Into what lake does it flow? Where are two desert regions? Where is the capital? Virginia City?

Arizona.—What river on the west? What river in the south and where is the capital? Where is the Grand Cañon? Tucson

Utah.—What two mountain ranges in Utah? What gre What lake south of Great Salt? Where is the Green River Lake City? Ogden?

Idaho.—What mountains form the northeast boundary? T ern? What river crosses the southern part of the State? W the Salmon river? The capital? Montpelier? Weiser?

California.—What range of mountains near the coast? Wh east? Where is Mount Shasta? Mt. Whitney? What rive part of the eastern boundary? What two drain the valley fornia? Direction? Where is the capital? San Francisc Angeles? San Diego? Santa Barbara? Stockton? Oakland?

Oregon.—What mountain range crosses the State? Wh forms part of the northern boundary? The eastern? Whic through the Cascade range? Which flow north into the Co Where is Mt. Hood? The capital? Portland? Oregon City?

Washington.—By what mountains is Washington crossed? is Mt. St. Helens? Mt. Adams? Mt. Baker? Rainier? Puget Strait of Juan de Fuca? What river drains and partly bounds ington? Where is the capital? Seattle? Tacoma? Spokan

The Portals; canyon of the Grand river, Colo. This river has cut its way for thousands of feet through the sand stone rock. Notice how the cliffs are worn away by the action of the weather.

its hot springs. It is in a wool-growing district. **Zuni** is an Indian village on a reservation; near it are some remarkable ruins of pueblos which were once inhabited by people of a much higher civilization than that of any of the Indian tribes which were found in the United States.

9. Colorado.—Colorado contains the highest peaks in the Rocky Mountains, and immense elevated valleys called parks. These parks are enclosed by lofty mountains. The largest exceeds in size the State of Massachusetts.

Among the mountains of this State are the head-springs of four large rivers; namely, the Colorado, flowing west into the Pacific; the South Platte, flowing in the opposite direction to join the Missouri; the Rio Grande, and the Arkansas.

Colorado is rich in gold, silver, copper, coal, and iron. It is first among the States in the production of gold and silver, and

A view of Cripple Creek, in the heart of the Rockies in Colorado.

second in lead. It was formerly considered too arid for agriculture, but by means of irrigation and improved methods of cultivation, Colorado now produces from her farms greater values than from her mines.

10. Cities.—**Denver,** the capital, is the largest city in the Rocky Mountain region, and a center for railroads and mining and cattle-ranch supplies. **Pueblo** is an important city, with smelting-works, rolling-mills, and machine shops. **Colorado Springs** is widely known as a health resort. **Leadville,** 11,000 feet above the sea, is famous for its silver mining, gold, copper, lead, zinc, and iron, and **Cripple Creek** for its gold mines.

At **Manitou,** near Colorado Springs, are four remarkable mineral springs. At **Golden** is located the State School of Mines, and at **Boulder,** the State University.

11. Wyoming.—Wyoming, like Colorado, is a region of elevated plains, mountains, and valleys.

It contains the sources of the Missouri, the Columbia, and the Green rivers.

The **Yellowstone National Park,** situated in the northwestern corner of Wyoming, is a tract of land 55 by 65 miles, Congress as a national park, or pleasure ground. It is for its lakes and waterfalls, its deep cañons, boiling geysers.

The **Old Faithful** geyser spouts every fifty-five minutes a stream of water 150 feet high. The cañon of the Y is a gorge from 1,000 to 1,200 feet deep.

Rich coal-beds are found in many parts of the State able deposits of gold, silver, copper, and iron.

The soil in the river valleys, wherever irrigation is produces abundant crops of grain. The United Stat ment is building enormous irrigation works on its p

Silver bars, called bullion, at the smelter in Leadville.

which will, upon their completion, be open to the pub on and purchase. Grazing is an important industry.

Wyoming ranks second in the amount of **wool** produ

12. Cities.—**Laramie** is the seat of the State **Rock Springs** and **Sheridan** are the headquarters mining interests. **Cody** has many large irrigation **Rawlins** and **Caspar** are wool centers.

Cheyenne (*shī-en'*), the capital, is a great cattle ma

13. Montana.—Montana is first among the States duction of copper. It abounds also in mines of gold, lead. The river valleys have a fertile soil and rich pasturage. Stock-raising and wool-growing are important industries.

A field of bowlders in northern Colorado. These ha down from the mountains by glaciers, one of which the side of Long's Peak, in the distance.

In the center of the State are the **Great Falls** of the Missouri river, among the most picturesque in America. The head of navigation of is at **Fort Benton,** about 2,500 miles above **St. Lou** gation is tedious and difficult. The voyage up takes down, ten or twelve.

14. Cities.—**Helena,** the capital and chief comme of Montana, is beautifully located on the foothills of Mountains. It has large gold mining interests, and market for mining machinery. **Butte** and **Anacond** center of the largest copper mining and smelting w world. **Great Falls** is built at the falls of the Mi

d is an important center in the manu-
ture of mining machinery. **Missoula** is
a mining and farming region, and is
e seat of the State University. **Billings** is
shipping point for live stock and **Boze-**
an is in a mining and lumbering region.

Review Topics.—States and Territory of the
ky Mountain region. Surface. Rivers. Why is
igation necessary on the Great Plains? Describe
method. The climate. The chief resources.
whom was New Mexico settled? Chief products.
ta Fé. Las Vegas. Zuñi. The mountain peaks
Colorado. The great Parks. Rivers. Mineral
ductions. Agriculture. Denver. Leadville.
lorado Springs. What State does Wyoming re-
mble in surface? Yellowstone Park. Describe
e mineral resources of Wyoming. The river
lleys. The capital. In what does Montana
ound? What portions of the State are fertile?
e Missouri river is how far navigable? What are
e chief trade-centers?

Grand Cañon of the Colorado, in Arizona. Here the swift current has cut its way through the sandstone rock to a depth of about 6,000 feet. Notice the layers or strata of rock, and the crumbled rock or talus which has gathered at the foot of the cliffs and is washed away at high water. [Copyright, Detroit Photo. Co.]

XLII. THE PLATEAU REGION.

1. The Plateau Region lies between
e Rocky Mountains and the Sierra Nevada and Cascade ranges.
is several thousand feet above the sea, and varies in breadth
om 300 to 700 miles.

It contains the States of **Nevada, Idaho,** and **Utah,** and **Ari-**
na, now a territory.

2. Surface.—The surface is very rugged. Mountain ranges
verse it in various directions. The **Wasatch,** one of the lofti-
t of these ranges, lies between the **Great Basin** and the **Plateau**
the Colorado. The Great Basin is 3,000 feet lower than the
lateau of the Colorado. It embraces the western part of Utah
d nearly the whole of Nevada.
uch of this region is barren, oc-
pied by sandy and salty lands
d salt lakes.

Among its remarkable features are the gorges called **cañons,** often several thousand feet in depth. They have been cut by the rivers through layers of rock.

...gating a field is to... the ...ter in through a ditch and to flood each part of the field ... succession by building a little dam across the ditch, as ...own in the picture.

The most noted is the **Grand Cañon of the Colorado.** It is more than 300 miles long, and from 3,000 to 6,000 feet deep.

3. The climate is marked by great dryness. As in the Rocky Mountain region, artificial irrigation is resorted to on an immense scale.

The **prevailing winds** come from the Pacific laden with moisture; but in crossing the cold peaks of the Sierra Nevada they are chilled, and deposit their moisture as rain or snow. When, therefore, they reach the Plateau region they are **dry winds.** Owing to the almost entire absence of moisture, changes in temperature are very rapid. It is often 70° or 80° at noon, and below freezing-point at sunrise.

4. Minerals.—The hills and mountains that rise up from this plateau are stored with rich mineral deposits. Silver, gold, copper, lead, and other metals are found, with beds of salt and soda of unknown extent. The chief industry, therefore, is mining.

5. Vegetation.—Large areas of this region are barren wastes covered with gray sage-brush and cactus. The river valleys, however, if irrigated, are extremely fertile.

6. Nevada.—Nevada occupies a large part of the Great Basin. Its mines constituted its chief source of wealth. Until recently, they produced a large part of all the silver annually mined in the United States. Many of them, however, are now exhausted, and the State has greatly declined in population.

The **Muddy Salt Mine** is the largest deposit of rock-salt known in the country. It is two square miles in area. Some of the valleys are very fertile, and **stock-raising** is one of the chief occupations. Most of the State, however, is unsuitable for agriculture, except where water can be obtained.

Irrigation. Sometimes a reservoir to hold water for irrigation is made by building a dam across a stream. Sometimes the water has to be pumped into a reservoir or into a flume, as shown in this view at Elgin, Utah. This water wheel runs the pump for irrigation.

7. Cities.—**Reno,** the chief city, is a mining center and manufactures machinery. **Carson City,** the capital of the State, is near gold and silver mines, and has mills for the extraction of these metals. The hot springs in this neighborhood make it a resort for invalids. **Virginia City** has the richest gold and silver mines in the State. The famous Comstock Mine there has yielded silver to the value of $475,000,000.

8. Arizona.—The northeastern part of Arizona is a high plateau ranging from 5,000 to 8,000 feet above sea level, with ranges of mountains formed by volcanic action. This part of the State has rainfall just sufficient for cattle and sheep raising, which is an important and lucrative industry.

The southwestern half of the State is much lower and has even less rain than the more elevated part, but by **irrigation** it is becoming one of the best fruit-growing regions of the country.

The most important occupation is **mining.** The State stands

Provo Valley, Utah.

third in the production of copper, and has beside extensive gold, silver, and lead mines. The smelting and refining of ores is important.

Cities.—Tucson, the largest city, is the seat of the State University. It is an important mining center and has smelting works for the reduction of gold, silver, and copper ores. **Phœnix,** the capital, is in the center of a well-irrigated farming region. Both cities have a large trade in mining outfits and machinery.

9. Utah.—Utah is traversed from north to south in its eastern half by the Wahsatch Mountains. At their western base lies the Great Salt Lake, 75 miles long. The western part of the State lies in the Great Basin. The rainfall throughout the State is very slight, but by irrigation the agricultural resources have been wonderfully developed. Beet raising and sugar manufacture are profitable industries. Sheep raising is very important, and much wool is exported.

Mines of gold, silver, lead, and copper are extensively worked.

Utah is inhabited largely by the Mormons or Latter-day Saints.

A raft of logs in the Columbia rive , Oregon.
[By courtesy of the Four Track News.]

Cities.—Salt Lake City is the capital and the largest and most important city in the State. It has wide, beautiful streets and is the center of the Mormon religion. It is the meeting point of several trunk lines of railway and commands the trade of an extensive and fertile region. **Ogden** is an educational center and has factories for the production of canned goods, beet-sugar, and textiles.

Logan is located in a fertile valley. The State Agricultural College is here. **Provo,** also in an agricultural region, has woolen and knitting mills.

10. Idaho.—Idaho is in large part mountainous. It stands first in the United States in the production of lead, and large amounts of gold, silver, and copper are mined. Many other minerals are found, but are not extensively mined.

The State is well covered with valuable pine forests from which much lumber is cut. Sheep and cattle raising are very important industries. The soil is rich, but the rainfall is slight. Many private irrigating canals have been constructed, and over two million acres have been reclaimed and made crop producing. At present the greatest agricultural interest of the State is sugar-beet growing, and the manufacture of beet sugar is as large proportions.

Cities.—Boise, the capital, manufactures iron and lumb

Copyright, Det

Pacific Ocean and the rocky coast at San Francisco. The city is on a peninsula ab wide enclosed by the Pacific Ocean. San Francisco Bay and the strait called the Golde connects them. The wharves are on the bay, which furnishes the best ha bor on the

shipping point for wool, hides, and fruit. A governmer Office is located here. **Lewiston** manufactures mining ma

Review Topics.—Describe the Plateau Region. The cañons. Industries. The vegetation. Nevada. Its silver. the Muddy Salt Mine. Why is the State not a agriculture? Describe Virginia City. The cap scribe surface of Arizona. Its rainfall. I Centers of trade. What mountains traver Locate Great Salt Lake. The mineral pro Agricultural resources. The inhabitants. Ogden. Describe Idaho. Its resources. Capital leading towns and their industries.

XLIII. COAST REGION.

1. This region embraces **California, gon, Washington,** and **Alaska.** Exc Alaska, it is traversed from north to by the Sierra Nevada and Cascade r The low Coast range stretches alon shore. Between these ranges lie valleys. They form the most imp parts of this region.

The principal rivers are the **Columbia,** which, in the lower po its course, forms the boundary between Oregon and Wash and the **Sacramento** and **San Joaquin** (*san wah-keen'*), traverse the **Valley of California.**

2. Climate.—The climate of this region is widely d from the climate of the Atlantic coast in the same latitude is caused by the prevailing winds. In both regions th westerly. But on the Atlantic side they are from the land, and in winter are cold; on the Pacific side they come from the sea, and are warm and moist.

Raisins, prunes, and apricots are dried in the open air in This shows an orchard, and the process of drying apr San Joaquin Valley, California.

Oregon is in the same latitude as the **New England States. Washington** is,

for the most part, much farther north. In New England the farmers have to house and feed their cattle all the winter, while in Oregon and Washington the pastures are green all the year round. The west winds and the **Japan Current** give these States a mild, moist climate.

Summer and winter in California are called respectively the **dry season** and the **rainy season.** In summer, for weeks together, not a drop of rain falls. In Oregon and Washington, however, the **summer rains** are somewhat more copious, and the country is well watered.

3. Resources.—The deposits of gold and quicksilver in this region are among the richest in the world. The soil of the valleys is marvellously productive.

The fruits, flowers, and vegetables are famous for their beauty and size. Sixteen hundred pounds of hops to the acre are not unusual returns. Immense herds of cattle and flocks of sheep find rich pasturage.

The **slopes** of the mountains are covered with forests of pine, fir, and cedar.

Much of the gold dug from mines is embedded in hard rock. This rock is broken up into small pieces which are crushed into powder in a "stamping mill." The stamps are immense pestles, weighing over 1,000 pounds, which are raised by machinery and are dropped upon the rock, crushing it into powder. Flowing water washes the powdered rock over copper plates covered with quicksilver, to which most of the gold adheres, while the sand is washed on to the boxes which you can see at the end of the plates. The quicksilver is evaporated, leaving the pure gold. Some gold is left in the sand and is taken out by a process called "concentration."

4. California is the oldest of the Pacific States.

The Spanish Franciscan Friars established **missions** or settlements in it at an early day. But it was thinly settled until, in 1848, it was ceded by Mexico to the United States. Soon after this gold was discovered, and people flocked to the mines from all parts of the world.

California is the **second State** in the production of gold, and is one of the chief sources of the world's supply of quicksilver.

Agriculture is by far the most important industry of the State. The irrigated lands are larger in aggregate area than Connecticut. Wheat, barley, hops, and the sugar-beet are extensively cultivated. Much wheat and barley of excellent quality are shipped to Europe by the Cape Horn route.

Oranges, lemons, olives, almonds, and grapes flourish luxuriantly in southern California. The production of raisins has become great enough to supply the whole United States.

Mt. Shasta, California, which was once an active volcano.
[Copyright, Detroit Photo Co.]

California is the first wine-producing State Union. It is also a fine farming and grazing country. California is noted for its remarkable **scenery.**

e **Yosemite** (*yo-sem'i-te*) **Valley** is a gorge of singular grandeur. Its rocky walls are from three to five thousand feet in height. The **Merced River** flows through it, and makes a series of wonderful cascades, one of which, the Nevada Fall, is six hundred feet high.

The harbor of San Francisco, showing San Francisco Bay, over which most of the freight and passengers coming by rail to the city cross from Oakland on ferryboats.

Some of the largest and **loftiest trees** in the world are found on the slopes of the Sierra Nevada. They are gigantic evergreens. Many of them have each a diameter of 40 feet, and are more than 300 feet in height.

6. Cities.—**San Francisco** is the largest and most important seaport on the American shore of the Pacific. Steamers connect it with China, Japan, Australia, Alaska, and the Hawaiian and Philippine Islands.

By means of these steamship lines and the Pacific railroads a large and growing trade is carried on between these countries and the United States. Most of the **silk** and **tea** brought from China and Japan come by way of San Francisco. **Raw sugar** is brought from the Hawaiian Islands and refined. Other leading industries are meat-packing and the manufacture of clothing and flour.

Los Angeles is the second city in size. Four lines of railway meet there. It is the center of a rich oil and fruit region. Oil refining and fruit canning are the leading manufacturing industries. **Oakland,** on the east side of San Francisco Bay, is the terminus of railroads, whence freight and passengers go by ferry to San Francisco. **Sacramento,** the capital of the State, has a large wheat and flour trade.

Petroleum wells near Pasadena.

San José, in the beautiful Santa Clara Valley, has the largest fruit canning, packing, and drying establishments in the State;

nearby are the **Stanford University,** and the famous **Lick Observatory. San Diego** has a good harbor, and exports wheat and fruit. **Stockton** is situated in a very fertile plain. It is an important center of trade, and has large manufactures. **Berkeley,** on the eastern side of San Fancisco Bay, is the seat of the **University of California.** It has tanneries, oil, and chemical works. **Fresno** is located in the fruit-growing region. Its chief industries are the drying and canning of fruits, olives, and figs, and the manufacture of olive-oil, wine, and brandy. **Pasadena** is a noted winter resort. **Alameda** is engaged in shipbuilding and petroleum and borax refining.

7. Oregon.—The State is in the same latitude as New England, but the climate in the eastern part is not unlike that of Maryland, while west of the Cascade Mountains it is even milder than Maryland in winter, but not so oppressively warm in summer.

The valleys that lie between the Cascade and Coast ranges are very fertile and yield abundant crops of cereals and fruits without irrigation, and larger areas in the eastern part of the State are being brought under a high state of cultivation by irrigation.

Stock-raising and wool-growing are important industries.

The western slopes of the Cascade and Coast ranges are covered with vast forests, and the cutting of timber is a leading occupation.

The yield of gold and silver is very great. Coal and iron are abundant.

The streams abound with excellent fish. Immense quantities of salmon are canned and exported.

Cities.—Portland, the largest city, is at the head of ocean navigation on the Willamette river and is an important railway terminus. It exports more lumber than any other port in the world; flour, salmon, dairy products, and wool are next in importance.

The water front at Tacoma.—Vessels loading with wheat from storehouses on the wharf.

Salem, the capital of the State, has industries similar to those of Portland. **Astoria,** at the mouth of the Columbia river, is noted for the preserving of salmon.

8. Washington.—The part of the State east of the Cascade Range lies in the Columbia plateau. It is a fine agricultural region and raises much wheat and other grains, hops, and fruit.

The western part of the State contains extensive **forests** of pine, cedar, hemlock, and spruce. The manufacture and export of lumber is the most important industry in the State. Puget Sound, with its connections, furnishes navigable routes for a distance of nearly two

A field of alfalfa at Union, Ore. Alfalfa is a forage grass well adapted to a dry climate. With irrigation, five or six crops can be raised each year.

Shipping wheat.—Pendleton, Ore

hundred miles into the interior. An abundance of found in the vicinity, making Washington the large producing State on the Pacific coast. The waters sound and its tributary rivers swarm with salm other fish. The preserving and shipping of fish is th largest industry.

Cities.—Seattle is the largest city and chief seaport. terminus of three great trans-continental railway lines steamship connections with all parts of the world. I industries are the handling of and coal, fisheries, and co **Tacoma,** the second city in the terminus of the Northern Railroad. It has a deep-wa bor and ships, wheat, lumb coal. Tacoma has the largest mill in the world, and is t of the State University. S has fine water power and e manufactures of lumber an **Walla Walla** is situated in th of the wheat and fruit-growing region.

Olympia, near the southern end of Puget Sound, is the capit State. It has fishing and lumber industries. **Bellingham,** ishing town in the northwestern part of the State, has lum iron industries and fish canneries. **Everett** manufactures iron, and furniture.

Harbor of Seattle.—Steamer leaving for Alaska.

9. Alaska.—The territory of Alaska was purchased fr sia in 1867. Its shores are bathed by the Japan Cu mighty current in the Pacific resembling the Gulf in the Atlantic. The westerly winds that blow o current temper the climate of Alaska and the Aleutian as the winds from the Gulf Stream temper that of and Iceland.

Juneau, the capital of Alaska.

Mt. St. Elias, 18,010 feet high, with its everlasting cap of snow, stands as a landmark between Alaska and the British Possessions.

The **Yukon** is the largest river in North America. It is 80 miles wide at its mouth, and 10 miles wide 800 miles above its mouth.

The **prevailing winds** are westerly. Coming from the sea, they give a moist climate to the coast, in the neighborhood of which heavy forests of spruce, fir, cedar, hemlock, alder, and pine are found.

Grass grows luxuriantly in places, but the **summers** are too short and cool for general agriculture.

Coal and other **minerals** are abundant. The **gold** deposits are among the richest in the world.

The inhabitants are mainly **Eskimos** and so-called Indians, who, however, differ greatly from the Indians in other parts of the United States. They live by fishing, and hunt seals, sea-otters, martens, foxes, and bears. The fur-seal fishery is the most valuable in the world. The seals are taken on and near the Pribilof Islands. The cod, salmon, and herring fisheries also are of immense value. At certain seasons the salmon fairly choke up the fresh-water streams on their way to the spawning grounds.

Cape Nome. Notice the camp in the foreground where gold is being mined on the shore.

The capital is **Juneau.** **Nome** and Juneau are mining centers.

The Aleutian Islands are volcanic and treeless; the natives live in *barabaras*, structures half above and half below the ground. They make the frames of their walrus-skin canoes of wood drifted from Asia and cast upon their shores by the Japan Current.

Placer mining in Alaska. The sand and gravel is washed down through a long trough which has slats across the bottom. The water carries the sand and gravel away, and the gold, being very heavy, is caught by the slats and picked out by hand.

Review Topics.—States in the Coast Region. Mountains. Rivers. Describe the climate. Compare New England and Oregon. The seasons in California? Mineral deposits? Agricultural resources? The forests? Settlement of California? Its gold product? Most important industry? Leading agricultural products? Fruits? Wine and wool product? Describe the Yosemite Valley. The great trees. Describe San Francisco. Other important cities. What of the climate of Oregon? Products? Most fertile part? The capital? Washington. Alaska. The Aleutian Islands.

XLIIIa. THE ISLAND REGIONS.

1. The Island Regions belonging to the United States are **Porto Rico,** with adjacent islets; the **Hawaiian Islands;** the **Philippines; Guam,** one of the Ladrones; and **Tutuila** and **Manua,** islands of the Samoan group.

2. Situation and Climate.—Porto Rico is in the Atlantic Ocean; the others are in the Pacific. All are within the tropics, and within the region of the northeast trade wind. Their climate and productions, therefore, are naturally much alike.

The plaza or public square of a town in Porto Rico. Notice the coffee spread out to dry.

3. Porto Rico is the smallest of the four "Greater Antilles."

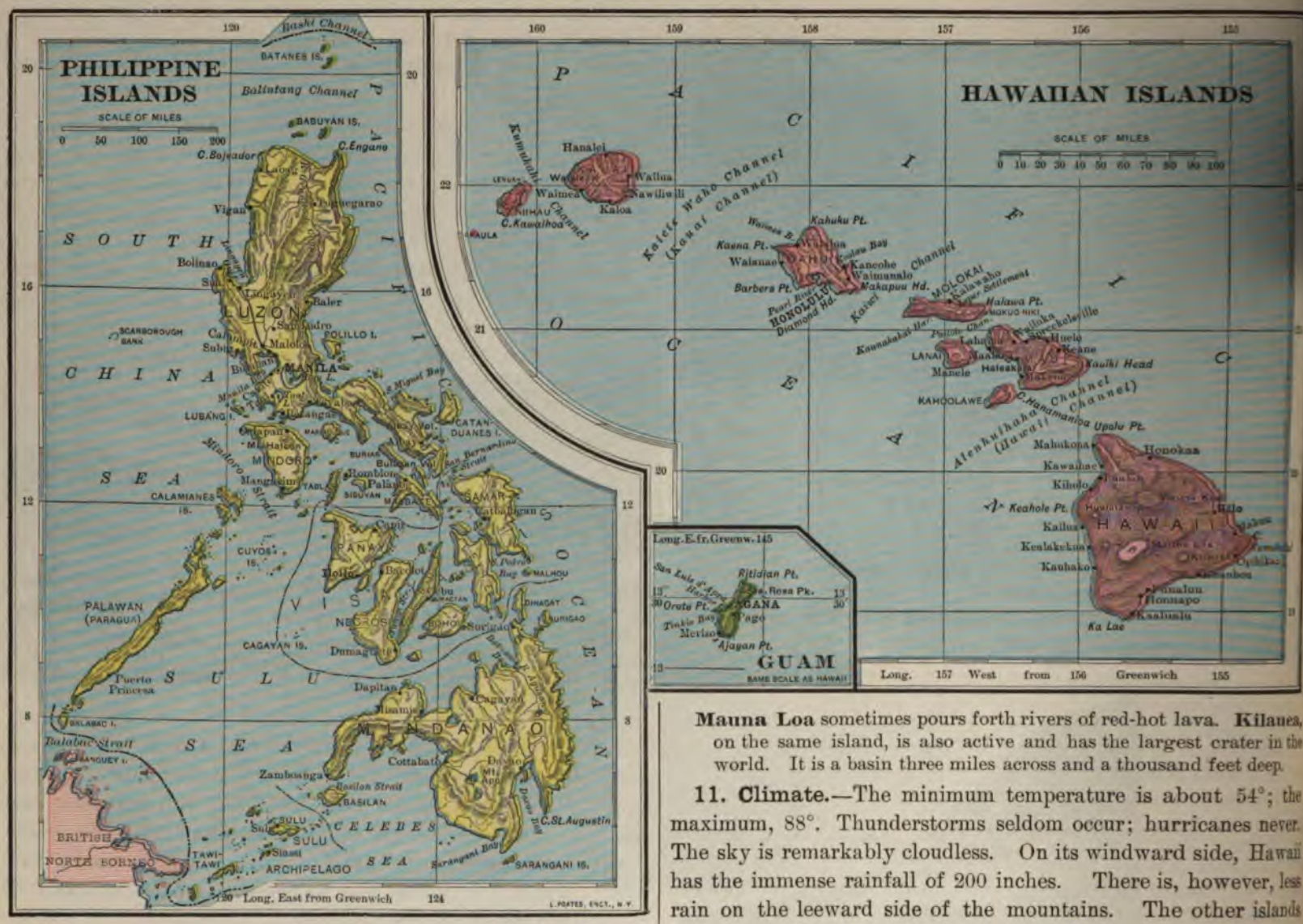
4. Rainfall.—Mountains cross the island from east to west, and greatly influence the rains. Driven up the mountain slopes, the warm northeast trade wind, freighted with moisture, rises into cool atmospheric regions. A copious rainfall is the result. The **northern part** of the island is watered by more than a thousand streams, yet sometimes the **southern part,** screened by the mountains, suffers from drought.

5. Products.—The island is a conservatory without glass. Tree ferns and cocoanut palms wave in the breeze; orange bloom scents the air; sugar-cane flourishes in the lowlands; the coffee-tree decks the hillsides, to the height of a thousand feet, with snow-white blossoms or scarlet berries. Banana plantations yield millions of golden clusters. Thousands of acres are planted with mountain rice that forms the chief food of the laborer.

6. Animals.—Of the wild animals of Porto Rico none are beasts of prey. No poisonous snakes are found.

7. The **exports** are coffee, sugar, honey, tobacco, cocoanuts, and pineapples. The **imports** from the United States are chiefly

A street in Ponce, Porto Rico. The trees and shrubbery stand in the patio, or court, of a private residence.



rice, cotton goods, preserved meats, flour, and iron and steel goods.

8. The **Population** consists, in nearly equal proportions, of persons of Spanish origin and of the descendants of negro slaves. It numbers about 950,000. The language is Spanish. The greater portion of the people are well-to-do. There are **schools** and two **colleges** in the island. The people are mostly Roman Catholics.

Cities.—**San Juan,** strongly fortified (pop. 32,048), and **Ponce** (pop. 27,952) are the largest cities.

Mauna Kea, a volcano on Hawaii, and the city and seaport of Hilo.

9. Hawaii comprises eight large islands and a number of mere rocky islets.

10. Origin.—The entire group has been thrown up by volcanic action; and on Hawaii, the largest of the islands, the volcanoes are still active.

Mauna Loa sometimes pours forth rivers of red-hot lava. **Kilauea,** on the same island, is also active and has the largest crater in the world. It is a basin three miles across and a thousand feet deep.

11. Climate.—The minimum temperature is about 54°; the maximum, 88°. Thunderstorms seldom occur; hurricanes never. The sky is remarkably cloudless. On its windward side, Hawaii has the immense rainfall of 200 inches. There is, however, less rain on the leeward side of the mountains. The other islands have about 50 or 60.

12. Products.—The sugar cane, the pineapple, banana and coffee tree flourish.

Peculiar to these islands are the **candlenut** and the **taro.** The kernels of the candlenut are so oily that they are used like wax for candles. The taro supplies the natives with their principal food. It has a large starchy root, which is as important in Hawaii as the potato with us. These islands are capable of producing great variety of grains, vegetables, and fruits; but little attention is given to the cultivation of any plant except the sugar cane. Even **rice,** although it flourishes on the lowlands, is imported mainly from Japan. The **sugar crop** is large and is exported mainly to the United States, with which country trade is chiefly carried on. There are n

TRANSPORTATION AND TRAVEL IN THE UNITED STATES.

Advantages of Transportation Facilities.—Nothing adds more to the comfort and prosperity of a people than the power to travel quickly from place to place and to transport goods cheaply and easily. To accomplish these things a vast system of public highways and railroads traverse the country like a fine network, reaching to every city, town, village, and even to every dwelling house in the entire country. Many canals have been built to connect the waterways of the country, and to afford a safe passage around waterfalls and rapids. Our rivers and lakes are navigated by steamboats, barges, canal boats, and by every sort of craft carrying passengers and freight. Steamships ply along our coasts, carrying goods from port to port, and ocean liners cross the seas in every direction, carrying our goods to all parts of the world.

AN EXPRESS TRAIN RUNNING SIXTY MILES AN HOUR.

Advantages of Railroads.—The railroad, on account of the speed, regularity, and low rates at which freight is carried, has become the most important means of inland transportation. The old stage-coaches made good speed if they accomplished six or seven miles an hour. The early emigrants to California occupied weeks and months, wearily crossing the country in covered wagons, and often suffering from scarcity of food and water. The trains on our Pacific railroads occupy less than a week in going from ocean to ocean; and in the palace cars one can be furnished with every luxury. But even when we do not travel we are benefited by railroads. All people are either producers or consumers, and railroads are of advantage to both.

How Producers are Benefited.—Productions of every description become more valuable when producers have convenient transportation. The grain growers of the Northwest, the cotton and tobacco planters of the South, the manufacturers of the Eastern States, and the mining population of the Rocky Mountain Region depend for their prosperity upon the facilities for transportation afforded them by railroads. We can understand how railroads benefit producers, if we consider the case of the farmer. It is of little use that a region is fertile, unless its products can be sent to market. Before we had railroads it sometimes happened that farmers a few hundred miles west of Chicago actually burned some of their corn as fuel because of the expense of getting it to market. Firewood was scarce, and the lack of transportation made fuel expensive; it also made the farmer's corn of little value. To burn a part of the crop was cheaper than to buy fuel. The early settlers of Kentucky were without railroads. The Alleghenies almost barred them from the markets of the Atlantic Slope. Consequently, they took their crops to New Orleans, rafting them down the Ohio and the Mississippi. At the end of their voyage they sold the crop and raft and made their way home as best they might. The journey down and back occupied more than six months. The crops of Kentucky now reach a market in a less number of days.

How Consumers are Benefited.—Not many years ago a severe famine prevailed in a certain section of India. Thousands of people perished from starvation. And yet there were other regions of India where there was abundance of food. But as this had to be transported chiefly in ox carts, only a little could be carried at once, and it took a long time to reach the famine-stricken region. If there had been railways connecting the district where the famine was with those places where food abounded, the starving people could very soon have been relieved; and therefore the British Government has urgently encouraged and aided the construction of such railways. At present there are in India about 27,000 miles of railway.

Railroad Traffic.—There were in the year 1830 only 23 miles of railroa United States. At present there are more than 200,000 miles, or more t third of the total mileage of the world. Those who live in towns throug important railroads pass can form some idea of the enormous amount of done by them. Those going east carry cattle and grain; those from Miss Kentucky, hemp and tobacco; from Ohio and adjoining States they carry p and flour. Some are coal trains, others are composed of refrigerator cars fresh meat and fruit. Other cars support large iron tanks containing p

The railroads of the South transport a great deal of cotton to the ports of or to those of the Atlantic seaboard. Many run northward freighted with strawberries and melons grown in the sunny South.

Trains going westward are not, as a rule, so heavily laden as those going They transport manufactures from the Eastern States, or imports fro countries.

Canals.—Before the days of railroads, the waterways of the country chief means of inland transportation. Good highways were few, and o found in the older and more settled parts of the country.

In the early part of the nineteenth century a great westward movemen lation began. Thousands of people left their homes in the older colonies a the Blue Ridge and Allegheny Mountains into the rich farming lands o Valley. There were no bridges over the streams, the roads were bad, very expensive to transport the tools, household goods, and supplies needed to build up homes in a new country.

The chief route followed by these western settlers was up the River to Albany; thence by the Mohawk and Oswego Rivers to Lake across this lake and up the Niagara River and Lake Erie to a point oppo tauqua Lake; then overland and down the Allegheny River to Pittsbu part of this route goods had to be carried in wagons and on the backs of h the cost was $120 per ton from Albany to Buffalo.

In 1793 an attempt to build a canal between Chesapeake Bay and the River was made and given up. It was twenty-five years later that the New York, led by Governor Dewitt Clinton, began the Erie Canal, whi connect the Great Lakes with the Atlantic by way of the Hudson River. days of steam-drills and dynamite it would be an easy task to dig a ditch deep and forty feet wide; but with the picks and shovels of those days it years before the waters of Lake Erie were brought to New York harbor. reduced the cost of carrying a ton of goods from Albany to Buffalo to $14. fifty years it was the route by which the agricultural products of the W brought to the seaboard for export to foreign countries. This devel West by making a market for its products. It also built up the foreign c of New York City and made it the metropolis of America.

A FLOATING GRAIN ELEVATOR.
Transferring grain from a canal boat to an ocean steamer in New York City.

The success of Canal led to the bui many others, and be end of the century t and lakes of the cour connected by forty canals having a tot of 2,500 miles and $200,000,000.

The Welland Ca nects Lakes Erie and and the Sault Ste. Lakes Huron and Er were these canals bui Illinois and Michig and Drainage Canal Lake Michigan with sissippi River by wa Chicago and Illinois The Chicago Ri deepened and made into the Illinois in Lake Michigan, and off the sewage of which was polluting of the lake. This canal connects the two greatest waterways of the country leading canals are the Ohio Canal from Cleveland to Portsmouth; the M Erie, from Cincinnati to Toledo; the Hudson and Champlain, from Troy t hall; the Morris Canal, from Easton to Jersey City; the Delaware and across New Jersey; and the Lehigh Coal and Navigation Company's Ca Coalsport to Easton.

Steamboat and River Traffic.—Ten years after the invention of the steamboat in 1807, it had come into use on all the rivers of our country that were then routes of travel. The people of the West at once began to send their pork, flour, and lumber to New Orleans and to bring back hardware, tools, dry goods, sugar and coffee. As this was a cheaper route than the old routes from the eastern states it threatened the trade of New York and led to the building of the Erie Canal.

A MISSISSIPPI STEAMBOAT LANDING AT VICKSBURG.

The long gang-planks in the bow can be swung from side to side and raised or lowered for convenience in handling freight. Notice the coal barges that have come down the Ohio River.

You will notice that the mouth of nearly every large river is a harbor, and that an important city is built there. Also, that the head of navigation on a river is the seat of a manufacturing town. Between the port and manufacturing town there is usually much travel and trade, giving profitable employment to steamboats and other river craft. Smaller towns also are found along navigable rivers, which are connected with the larger cities by steamboats and barges carrying freight and passengers. Farmers bring their grain, fruit, and other produce to the nearest shipping point on the river and send it by barge or steamer to the large cities. On the return trip these vessels carry goods which merchants in the smaller towns have bought in the large cities—farm tools and machinery and manufactured goods of every sort.

Trolley Lines.—Many goods as well as passengers are now carried on the numerous electric, or trolley, lines which go out in all directions from our large cities. These roads have greatly aided the growth of small suburban towns, to which they now carry the mails, express packages, and the less bulky articles of freight. Many people employed in the cities are enabled by the electric roads to have homes in the country, where there is plenty of room, light, and air. Electric engines are also beginning to take the place of the steam locomotive on railroads which traverse crowded districts and tunnels, where steam and smoke interfere with the comfort and safety of the people.

A TROLLEY FREIGHT TRAIN.

This train runs between two cities in Iowa. Notice that the electric engine is alike on both ends and runs in either direction by merely turning the trolley pole.

Coasting and Lake Steamers.—The Atlantic Ocean was the chief means of communication among the States before railroads were built. Commerce especially was carried on by means of sailing vessels, as this was the only way of transporting heavy goods, as cotton, lumber, and naval stores. Our coasting trade is still the most important part of our ocean commerce. It is entirely conducted by American vessels. The steamers engaged in this trade extend their voyages to Mexico, the West Indies, and South America. The lake trade ranks in importance with the coasting trade.

Steamship Lines.—In addition to our coasting steamship service there are many lines of ocean steamers that run between home and foreign ports.

About sixty years ago a vessel called the *Great Republic* used to sail between Liverpool and New York. This one ship could carry all the freight destined for Liverpool that accumulated in New York during a whole month. At present more than twenty steamers, each capable of carrying several times as much as the *Great Republic*, leave New York for the ports of Europe every week.

AN OCEAN GREYHOUND.

STANDARD TIME.

To obviate the inconvenience arising from differences in local time, what is known as "Standard Time" has been adopted in the United States. The country has been divided into four great time-belts, each about 15° wide. The local time of the central meridian of each belt is made the Standard Time for the entire belt.

Time Belts.—The meridians determined upon are the 75th, 90th, 105th and 120th west from Greenwich; and the time-belts are known as the Eastern, Central, Mountain and Pacific. As the meridians by which the time of the belts is determined are just 15° apart, it is clear that the difference of time in the different belts will be marked by exact hours for the simple reason that the sun apparently passes over 15° of longitude every hour.

The map on the preceding page shows by different colors the different time-belts. Within each of these all places will have the same standard time. Thus, when it is solar noon on the 90th meridian, it will be 12 o'clock by Standard Time in all places throughout the Central belt. From the map we see that Eastern time, being determined by the 75th meridian, is just 5 hours slower than that of Greenwich, Central time 6 hours slower, and so on. Here and there deviations from the system are found expedient for the convenience of railways, and these are indicated on the map by the lines of color which project into the neighboring belt.

THE INTERNATIONAL DATE LINE.

Just as nations have arranged that certain belts of longitude shall have the same time, so it has been arranged that the whole world shall, as far as possible, have the same date and name for the day. Since the sunrise travels about the globe from east to west, the day really *begins* at a different time for all places east or west of each other. It has been agreed that each new day shall begin at midnight on the 180th meridian. This gives the whole world the same name for the day except places crossed by this "International Date Line," as it is called. Let us suppose that July 4 is just beginning at midnight on the Date Line. As the midnight moves westward around the earth each place will begin the new day. By the time the midnight reaches London and the day begins, it will be noon at the Date Line. When New Orleans begins the day it will be 6 P.M. at the Date Line. When the day begins at San Francisco it will be about 8 P.M. at the Line. And just as July 4 is closing east of the Date Line, July 5 is beginning west of it. Thus the whole world except those places crossed by the line have the same *name* and *date*, or number, for the day. You will see from page 126 that the line passes through the middle of the Pacific Ocean and that its direction is such that certain islands lying in its path shall have the same day as the nearest continent.

A navigator sailing east around the earth arriving at the line on Monday, would change his date to Sunday on crossing, and would thus have two Mondays the same week. But if sailing west and reaching the line on Sunday, he would change it to Monday on crossing, and would have no Sunday at all.


PACIFIC TIME
MOUNTAIN TIME
120
105°
PACIFIC OCEAN
KEY TO RAILROADS.
1. Pennsylvania
2. New York Central & Hudson River
3. Delaware, Lackawanna & Western
4. Long Island
5. Boston & Maine
6. New York, New Haven & Hartford
7. Chesapeake & Ohio
8. Georgia Central
9. Seaboard Air Line
10. Atlantic Coast Line
11. Southern Railway
12. Norfolk & Western
13. Queen & Crescent
14. Louisville & Nashville
15. Great Northern
16. Northern Pacific
17. Southern Pacific
18. Union Pacific
19. Oregon Railroad & Navigation Co.
20. Oregon Short Line
21. Mexican Central
22. Atchison, Topeka & Santa Fe
23. Kansas City, Mexico & Orient
24. Chicago, Burlington & Quincy
25. Texas & Pacific
26. Denver & Rio Grande
27. Chicago & Northwestern
28. Illinois Central
29. Mobile & Ohio
30. Missouri, Kansas & Texas
31. Lake Shore & Michigan Southern
32. Cleveland, Cincinnati, Chicago & St. Louis
33. Chicago, Rock Island & Pacific
34. Canadian Pacific
35. Florida East Coast
36. Maine Central
37. Intercolonial
38. Minneapolis, St Paul & Sault Ste. Marie
39. Michigan Central
40. Baltimore & Ohio
41. Frisco System
42. Grand Trunk
43. Rutland
44. Erie
45. Wabash
46. Delaware & Hudson
47. International & Great Northern
48. Colorado Southern
49. St. Louis Iron Mountain & Southern

PRINCIPAL ROUTES OF TRANSPORTATION AND TRAVEL IN THE UNITED STATES AND CANADA

SCALE OF MILES

0 100 200 300 400 500

Longitude East from 5° Washington

CENTRAL TIME

EASTERN TIME

ATLANTIC TIME

BORMAY & CO., N.Y.

XLIV. DOMINION OF CANADA.

1. All of North America north of the United States, with the exception of Alaska and Greenland, is a part of the British Empire. Its area is about equal to that of the United States.

2. Surface.—The greater part of Canada lies in the northern slope of the Great Central Plain of the continent. West of this is the Rocky Mountain Plateau, and east are the basins of the Great Lakes and the St. Lawrence and of Hudson Bay. The watershed which divides these basins is the Height of Land, also called the Laurentian Highland. This is a worn-down mountain range, the oldest on the continent. This region contains many glacial lakes and short, rapid rivers. It abounds in fish and game and is a favorite summer resort and hunting ground.

Scenes in Canada during the summer. On the Gadeneau river, in the northern part of Quebec, showing the hard rocks of the Laurentian Highland.

3. The **Dominion of Canada** comprises the Provinces of **Ontario, Quebec, New Brunswick, Nova Scotia, Manitoba, British Columbia, Prince Edward Island, Saskatchewan,** and **Alberta,** the **Territory** of **Yukon,** and **four** unorganized **Districts.**

Hunters working their canoes up the rapids between two glacial lakes in Quebec. Notice the white birch trees on the bank.

4. Government.—The Dominion is governed by a **Parliament** and **Governor-General,** somewhat as the United States is governed by a Congress and President, but with this difference, that, whereas our President is elected by the people, the Governor of Canada is appointed by the British sovereign. Each province has as its **local government** a Lieutenant-Governor and a Legislature.

The **Canadian Parliament** consists of two branches. The members of the lower House are elected by the people; those of the upper are appointed by the Governor-General.

Lumber piled to season near Ottawa. Lumbering is the chief industry along the Ottawa river, which is lined on both sides with forests. The largest mills are near Ottawa, which is famous as a lumber market.

5. Resources.—The chief resources of Canada are her fisheries, her forests, her productive lands in the basin of the St. Lawrence and in the **central plain,** and her vast mineral treasures.

The **Central Plain** or **Fertile Belt** embraces the millions of acres between Lakes Winnipeg and Athabasca and the Rocky Mountains. It is in the latitude of Labrador, but presents a strange contrast to that country. In **Labrador** we find treeless plains, white with snow for eight months in the year, and, except in sheltered spots, vegetation of the scantiest

On the Great Central Plain, near the village of Brandon, showing an orchard in the foreground, a wheat field, and an avenue of trees.

description. Upon the fertile belt the snow is light, and cattle find pasturage all winter. It is a good grazing country, and is also becoming one of the great wheat gardens of the world.

6. The **Industries** of the people are mainly agriculture, lumbering, shipbuilding, fishing, mining, and commerce.

The **commerce** of the country is extensive, and is almost entirely carried on with England and the United States. The exports of cattle, grain, cheese, and other food products are sent mostly to England; but the lumber, metals, fish, and coal are sold to the United States. The United States furnishes about two-thirds of the imports, consisting of iron and steel goods, machinery, cotton, farm tools, and petroleum. Canada produces more cheese for export than any other country in the world. It also ranks first in the value of its fisheries.

On the Muskoka Lakes. Return from a day's hunting.

Trade Routes.—The Great Lakes, with the Welland Canal and the St. Lawrence, constitute the most important water route for Canadian commerce. The most important land route is formed by the Canadian Pacific Railway, which connects Halifax with Vancouver. At each of these ports steamship connections are made with European and Asiatic ports, making the shortest route between western Europe and the Pacific ports of Asia.

Railways connect the principal cities along the Lakes and on the St. Lawrence with the Atlantic and Pacific seaboards. The Red River of the North and the Saskatchewan traverse the "fertile belt," and, with Lake Winnipeg, Nelson river, and Hudson Bay, furnish, during the summer, **continuous water routes** to the ocean. During the winter, however, these water routes are closed by ice.

Recent Development.—The opening of the wheat lands and grazing regions of the West has attracted a vast number of immigrants, many of them going from the United States. Railroads are being extended in every direction, and a second grand trunk line is projected which shall traverse the heart of the country and penetrate the gold regions along the Yukon.

PROVINCES.	Area in Sqr. Miles.	Population.
Dominion of Canada	3,745,574	5,371,315
Ontario	260,862	2,182,947
Quebec	351,873	1,648,898
New Brunswick	27,985	331,120
Nova Scotia	21,428	459,574
Prince Edward Island	2,184	103,259
Manitoba	73,732	255,211
British Columbia	372,630	178,657
Saskatchewan	251,100	89,741
Alberta	253,500	69,199
Unorganized Territories	1,866,881	52,709
Newfoundland	40,200	217,037
Labrador (estimate)	120,000	3,634

MAP STUDIES.—What provinces of Canada border on the Atlantic? What great body of water in the interior? What great river flows into the Atlantic? What mountain range in the west? What ridge crosses the southeast portion?

Ontario.—Natural boundaries on the south? Northwest? Lake on the west? River on the east? What city on the Ottawa? Where is Toronto? Kingston? Hamilton? What is the capital?

Quebec.—What river valley is a part of Quebec? What gulf on the southeast? Where is the Saguenay River? What and where is the capital? What city at the mouth of the Ottawa?

New Brunswick.—What peninsula to the east? What river on the west? Bay on the south? Gulf on the north? What is the capital?

Nova Scotia.—What is the form of Nova Scotia? What island to the northeast? To the north? What separates Cape Breton Island from Nova Scotia? Where is Cape Sable? What is the capital?

Prince Edward Island.—In what gulf is Prince Edward Island? What is the capital?

Manitoba.—What river crosses Manitoba? What lakes on the northern border? What is the capital?

British Columbia.—On what ocean does Columbia border? What mountains form part of the eastern border? Name some of the highest peaks. What large island lies southwest of Columbia? What is the capital?

Saskatchewan.—What lakes in the northern part? Name and locate the capital.

Alberta.—The largest rivers. Four mountains. Name and locate the capital.

Newfoundland.—What strait separates Newfoundland from Labrador? Where is Cape Race? Where is Trinity Bay? Heart's Content? What is the capital?

7. Ontario.—Ontario is bordered by four of the Great Lakes, and has a climate like that of Michigan.

Coal, iron, petroleum, copper, and gold are among its **mineral resources.** Wheat and lumber are the principal productions.

The forests abound with the **sugar-maple,** and the making of sugar from it is an important branch of industry.

Logging scenes near Ottawa.

Ontario is the most populous, productive, and prosperous of the provinces.

It was **settled** chiefly by Scotch, English, and Americans, and English is the language generally spoken by the inhabitants.

Cities.—Toronto, the capital and chief city of the province, is the largest lake port in Canada. It has extensive manufactures of iron and machinery and a large wholesale trade.

Ottawa, the capital of the Dominion, contains the Parliament House, which is a magnificent building. It is the first city of Canada in the manufacture of lumber.

8. Quebec.—The Province of Quebec has a colder climate than Ontario. The westerly winds do not reach it until they have lost the warmth received by them in crossing the Lakes.

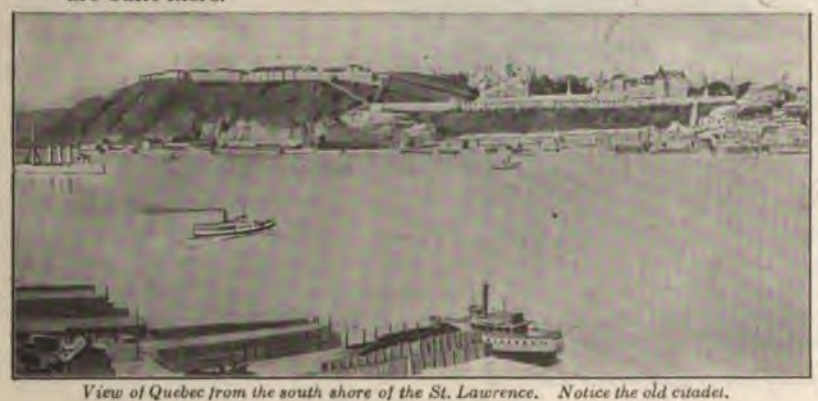
A steamer passing through the famous Lachine rapids on the St. Lawrence river at Ottawa. The river descends forty-five feet in three miles at this point.

The inhabitants are mainly descendants of the early French settlers. A majority of them profess the Roman Catholic religion, and use the French language. The records of the Dominion are kept in both English and French.

The southern part of Quebec is fine farming region, producing tobacco, hemp, flax, potatoes, and hay. The western part of the province has vasts forests of pine, spruce, and hardwoods. Timber is floated down the rivers to Ottawa, where it is manufactured. Cheese, flour, maple-sugar, and useful articles for home consumption are the leading manufactures.

Cities.—Quebec, the capital of the Province of Quebec, is beautifully situated on a high bluff.

It is a walled town, and is so strongly fortified that it is called "The Gibraltar of America." Its **lumber** export is large and many ships are built there.



View of Quebec from the south shore of the St. Lawrence. Notice the old citadel.

In 1759 a celebrated battle, which gave Canada to England, was fought between the French and English before the walls of Quebec. **General Wolfe** and the **Marquis of Montcalm,** the two opposing generals, both fell, each bravely leading his forces. During the Revolution, Montgomery, an American general, was killed in an attempt to capture the citadel of Quebec.

The **scenery** around Quebec is enchanting. In the vicinity are the picturesque falls and the natural steps of Montmorenci.

Montreal is the largest city and manufacturing center in Canada. It has an extensive commerce and exports a large amount of lumber, flour, wheat, cattle, and dairy products.

9. New Brunswick abounds in lime, red granite, and iron, and its forests yield large supplies of ship-timber. The people are chiefly employed in the lumber business and the sea fisheries.

Cities.—Fredericton is the capital. **St. John** is the largest town and chief port. Both cities are engaged in the manufacture of lumber.

10. Nova Scotia.—Nova Scotia is a peninsula. The island of Cape Breton belongs to it. The climate of Nova Scotia is healthful, and greatly tempered by the Gulf Stream.

The shores of Nova Scotia and New Brunswick are washed by the tides of the Bay of Fundy. These tides attain the enormous height of fifty, and sometimes even sixty, feet above low-water mark. They are the highest in the world.

Coal, iron, gold, and gypsum abound, and are largely mined. The forest wealth is great, and shipbuilding is one of the industries. The fisheries rank next to those of Newfoundland. The inland regions are devoted to agriculture.

Dominion Square, Montreal. Above it is Mount Royal, from which the [illegible]

Halifax, the capital, is a flourishing town. It has a large trade, chiefly in fish, with the United States and the West Indies. Its manufactures are important.

has a climate too severe to ripen even the hardiest grains; **potatoes** and a few other **vegetables** sometimes do well.

The coast is resorted to in the early spring and summer by fishermen, who catch large numbers of **seal** and **codfish.**

The population of northern Labrador consists mainly of **Eskimos.**

3. Danish America comprises Greenland and Iceland. (See map, p. 29.) **Iceland** has its own constitution and legislature.

Upernavik, from a photograph taken at midnight during the Arctic summer.

Greenland.—Of Greenland little is known except the western and southern coasts; but Peary's explorations on the north coast have proved this land to be an island.

The **interior** is one immense glacier. Snow falls every month in the year except July.

The **trees** are not more than six feet high. A few **grasses** grow, and buttercups and dandelions are found. Some **vegetables** are occasionally raised, but the hardiest cereals have failed.

The **population** consists of about 10,000 Eskimos and 200 to 300 Danes and other Europeans.

The skins of seals, reindeer, and other animals, with eiderdown, whale oil, whalebone, and fish, are exported.

The "Kite," Capt. Peary's ship, in an ice-pack.

Upernavik, in latitude 73°, is the most northerly abode of man.

Iceland is remarkable for its volcanoes and geysers.

Mount Hecla is the most noted volcano. The Great Geyser sends up a stream of water 100 feet high.

The **vegetation** of Iceland is not so dwarfed and scanty as that of Greenland, but there are no trees.

The warm waters of the **Gulf Stream** temper the climate. **Grain** will not ripen, but **vegetables** are raised, and enough **grass** grows to sustain cattle and sheep. **Wool, oil,** and **feathers** are exported. **Sea-fowl,** including the eider-duck, abound.

The **population** is about 69,000. The people are fond of literature, and have made valuable contributions to the history of America, which it appears was visited by an Icelander 500 years before Columbus. **Reykjavik** (*rīk'yah-vik*), the chief town, is a small hamlet, but the seat of a college.

4. The Arctic Regions of North America have been the scene of many explorations during the last four centuries. Among the explorers may be mentioned Hudson, Parry, Ross, Franklin, McClure, Hall, Nares, Nordenskiöld, Greely, Peary, and Amundsen.

It was formerly supposed that vessels could sail through Baffins's Bay, pass westward into Bering Strait, enter the Pacific, and then cross to China and the East Indies. This course was called the **Northwest Passage.** In 1854 **Capt. McClure** and his men crossed from Bering Strait to Baffin's Bay, but long before they reached the latter they were forced to abandon their vessel. The journey occupied more than three winters. In 1905 Capt. Amundsen made the passage *in a ship* from Baffin's Bay to Mackenzie Bay. The Northwest Passage is useless for purposes of commerce.

The **climate** of the Arctic regions is intensely cold. It is frequently 50° below 0°. **Glaciers** fill the valleys of Greenland, and slide down into the water. Large masses, sometimes miles in length and hundreds of feet high, break off and float away. They are called **icebergs.** They are carried by currents into the Atlantic Ocean, where vessels often meet and sometimes run against them.

During the six months of the **Arctic night** the aurora often brightens the sunless sky with its brilliant streamers of red, green, and yellow light.

On the **Arctic shores** scarcely anything grows but mosses and lichens.

A hut and a kayak, or native canoe.

The **native inhabitants** of these regions are called Eskimos. They are stunted in body and ignorant in mind. Their lives are spent in hunting, eating, and keeping themselves warm. They kill great numbers of seals and walruses. The flesh of these animals serves for food, their skins for clothing, and their fat for fuel. The Eskimos make many things of bone which we make of wood, iron or other metals.

Few **land animals** can exist in these desolate regions. The most important are the Eskimo dog and the polar bear. The dog is used by the Eskimos to draw their sledges over the snow and ice. The seals and walruses live partly on shore and partly in the water. In the Arctic seas one species of whale makes his home.

Lieut. Peary, now a commander in the United States navy, was sent to Greenland to determine whether or not it was an island. For his success in this work he received medals from the geographical societies of America and Europe. He made his headquarters at McCormick Bay, on the west coast of Greenland, and made excursions on sledges into the interior and along the coast. The pictures on this page were photographed by one of his party. The photographs were taken at midnight, about the last of June.

Stone huts or igloos.

Review Topics.—What is said of Newfoundland? St. John's? The Grand Banks. Area. Value. Fish. Fogs. Labrador. Products. Fisheries. Population. Danish America. Greenland. Vegetation. Population. Exports. Towns. Iceland. Its vegetation. Animals. Fish. Population. Chief town. Arctic regions. Northwest Passage. Climate. Icebergs. Aurora. Vegetation. Inhabitants. Animals.

XLVI. MEXICO.

1. Mexico lies south of the United States, and between the Gulf of Mexico and the Pacific Ocean.

2. Surface.—The greater part of the country is an immense

The harbor of Vera Cruz, the seaport of the City of Mexico, and the castle of San Juan ... The low coast may be seen on the right.

table-land supported by two ranges of lofty mountains, with a belt of lowland on both coasts.

The **lowland** varies in breadth from a few miles to one hundred or more.

The **table-land** rises precipitously from the lowland, and is from 5,000 to 8,000 feet above the sea. Upon it are **mountains** of great elevation. Many of their peaks are capped with perpetual snow. Some of them are **volcanoes,** as Orizaba and Popocatepetl (*smoking mountain*).

3. Climate.—Mexico, like all tropical countries, has a *dry* and a *rainy* season. The latter begins in June and lasts till November.

Silver mining in Mexico: 1. A picturesque silver mill at Guanajuato. 2. Rock containing silver is brought from the mine and crushed by the wheel as it is drawn around the circle. 3. The powdered rock is placed in tanks containing water and mercury and mixed until the silver is dissolved by the mercury.

The **temperature** varies according to the elevation.

The **lowland region** is hot and unhealthful. The Mexicans call it *Tierra Caliente* (hot land).

Yellow fever is a common and fatal disease in this region.

The **table-land** is known as *Tierra Templada* (temperate land). Its climate is delightful.

The **houses** are built without chimneys, as the winters are not cold enough to make fires necessary. The heat in summer is not oppressive. Flowers, fruits, and vegetables grow all the year.

The city of Puebla. Notice the flat roofs and low houses without chimneys.

View on the Central Plateau, showing the village of Chihuahua and Popocatepetl.

4. Mines.—The table-land is rich in mines of gold and silver, copper, lead, and quicksilver.

It is a part of the great mountain system, consisting of the Rocky Mountains and the Andes, which so abounds in minerals that it may be called the metal-producing treasury of the Western Hemisphere. Mexico produces more silver than any other country, and ranks second in copper.

Sonora, (*son-o'rah*) **Chihuahua** (*che-wah'wah*) and **Guanajuato** (*gwah-na-hwah'to*) are the states richest in minerals. 200,000 men are employed in mining.

5. Productions.—The lowland forests abound in mahogany and other cabinet woods. Among the vegetable products are sugar, bananas, oranges, lemons, vanilla, cacao, and the maguey (*ma-gway'*) or Mexican aloe, which is cultivated for its juice.

The **cacao** of commerce is the seed of the cacao tree. A well-known preparation of cacao is **chocolate.** The ancient Mexicans called it *chocolatl.*

The **maguey** or **pulque** plant is peculiar to Mexico. Its leaves served the Aztecs in place of paper. The juice when fermented is the national beverage. A variety of the pulque plant yields a kind of hemp called, from the place of its export, **Sisal** (*se-sahl'*) **hemp.**

A field of pulque plants on a Mexican farm.

The **productions** of the **table-land** are cotton, coffee, tobacco, and grain.

The **cotton plant** produces for several years together.

In many districts three, and even four, crops of **Indian corn** are raised during the year. It is one of the great food plants of Mexico. The inhabitants of the lowland subsist largely upon the banana and plantain.

MEXICO, CENTRAL AMERICA, THE WEST INDIES.

COUNTRIES.	Area in Sqr. Miles.	Population.
Mexico	767,005	15,605,919
Central America.		
Guatemala	48,290	1,842,134
Salvador	7,225	1,006,848
Honduras	46,250	744,901
Nicaragua	49,200	500,000
Costa Rica	18,400	322,618
Panama	31,570	340,000
West Indies	88,008	5,073,208
Belize or British Honduras	7,562	38,981

MAP STUDIES.—Describe the position of Mexico. Of Central America. The West Indies. What waters do these islands nearly inclose?

Mexico.—What country on the north? Southeast? What natural boundaries on the east and west? What peninsulas form parts of Mexico? What isthmus forms a part of it? What river separates it from Texas? Where is the Gulf of California? Where is Cape San Lucas? What mountains traverse Mexico? What volcanoes in the country? What portions of Mexico are lowland? Where is the capital? What seaports on the Gulf of Mexico? On the Pacific? Where is Chihuahua? San Luis Potosi? Puebla?

Central America.—What are the political divisions of Central America? Which is the most northern? The most southern? Where is the Bay of Honduras? Where is Lake Nicaragua? How is it connected with the Atlantic? Where is the Mosquito Coast? What are the mountains of Central America? Name some of the volcanoes. Give the capital of each State.

West Indies.—By what bodies of water are the West Indies surrounded? What are the grand divisions of these islands? Where are the Bahamas? What historic interest has Watling Island? Name the largest of the Greater Antilles. The Windward Islands are the southeasternmost of the Lesser Antilles. They are so called because they are on the quarter from which the trade wind constantly blows. Where is the capital of Cuba? Of Jamaica? Of Haiti? Santo Domingo? Porto Rico? Where is Santa Cruz? Curaçoa? Trinidad? What strait between Florida and the Bahamas?

XLVII. CENTRAL AMERICA.

1. Position.—Central America occupies the extreme southern portion of our continent, and lies between the Caribbean Sea and thePacificOcean.

A mountain road from the coast to the plateau in Central America.

It includes the six Republics of **Guatemala** (*gwah-te-mah'la*), **Salvador, Honduras, Nicaragua** (*nik-ar-ah'gwah*), **Costa Rica,** and **Panama,** and a British colony known as **British Honduras,** or **Belize.**

The entire population of Central America is not equal to that of the State of New York.

2. In **surface** Central America resembles Mexico. It is situated in the belt of volcanoes that girdle the Pacific Ocean.

Coseguina (*ko-say-ghee'nah*), in Nicaragua, during its eruption in 1835, darkened the air by its ashes at places 50 miles distant.

Port Limon, showing the railroad, the pier, and a steamer loading with bananas.

3. Minerals.—The mountains are richly stored with gold, silver, copper, mercury, and other minerals.

4. Climate.—The climate is like that of Mexico; the soil is generous, and it is harvest time the entire year.

Yet these states are not prosperous, because their inhabitants are wanting in industry and skill, and political harmony.

5. Productions.—The principal productions are coffee, bananas, cacao, sugar, indigo, tobacco, and vanilla.

The forests are most luxuriant tropical growths and abound in mahogany, rosewood, and dyewoods.

The chief **exports** are coffee, bananas, indigo, rubber, hides, and mahogany.

Our largest **imports** from these states are coffee, bananas, and mahogany. We sell them flour, meats, cloth, iron goods, and machinery.

The Panama Canal was begun by a French company, but the United States bought the rights of that company and is now carrying on the work. This view shows the place where the canal is being dug through a mountain pass. [Copyright, 1904, by the Am. Stereoscopic Co.]

6. Race and Religions.—The states of Central America once belonged to Spain. The dominant race is Spanish. The language is Spanish; the religion is the Roman Catholic.

7. Cities.—The largest city is **New Guatemala.** The capitals of the other states are **San Salvador, Tegucigalpa, Managua, Panama,** and **San José.**

Colon, in Panama, is the eastern terminus of the canal; **Port Limon,** in Costa Rica, is connected by railroad with San José, and ships bananas.

Review Topics.—What part of the continent does Central America occupy? Name the states. Describe the surface. The mineral resources. Climate. Are these states prosperous? Productions. Exports. Race and religion. Capitals.

XLVIII. WEST INDIES.

1. Position and Surface.—These islands are like stepping-stones across the ocean from Florida to the Orinoco; they are in sight from one to another, almost all the way.

They separate the Caribbean Sea and Gulf of Mexico from the Atlantic. They keep out the tidal wave, and make both sea and gulf nearly tideless.

All of these islands are mountainous except the Bahamas, which are low, coral islands.

2. Area.—The area of the whole group taken together is about twice that of the State of New York.

Basse-Terre, on the island of St. Kitts.

3. Divisions.—These islands form three divisions: the Bahamas, Greater Antilles, and Lesser Antilles.

The Greater Antilles are Cuba, Haiti, Jamaica, and Porto Rico. The Lesser Antilles are the group lying in a semicircle between Porto Rico and the mouth of the Orinoco.

4. Government.—Of these islands, only Cuba and Haïti are independent. Cuba is protected by the United States.

Porto Rico belongs to the United States (see p. 65); Martinique, St. Bartholomew, and Guadeloupe, to France; St. Thomas, San Juan, and Santa Cruz, to Denmark; Curaçao (*ku-ra-so'*) and St. Eustatius, to the Dutch; the Bahamas, Barbados, Jamaica, and most of the Lesser Antilles, to Great Britain.

5. The **population** is a little larger than that of Pennsylvania. The inhabitants are mostly negroes or the descendants of Spanish settlers. Spanish, English, and French are spoken.

Street scene in Pointe Pietre, on the island of Guadeloupe.

6. Climate.—The West Indies, with the exception of the Bahamas, are all in the Torrid Zone. They have a hot

SOUTH AMERICA.

XLIX. PHYSICAL FEATURES.

1. South America is triangular in shape. It lies partly in both the northern and the southern hemispheres; but by far the larger portion of it is in the southern.

2. Surface.—The surface of the continent is naturally divided into four regions: I. The **Andean Plateau**; II. The **Highland of Brazil**; III. The **Highland of Guiana**; IV. The **Great Central Plain**, which extends the entire length of the continent.

On the Andean Plateau.

MAP STUDIES.—What two oceans surround South America? What sea on the north? Great ocean current on the northeastern coast? What great current on the west coast? What is the shape of the continent? What directions have the Atlantic coasts of South America? What is the general direction of the Pacific coast? What bay and gulf on opposite sides of the Isthmus of Panama? What island forms the southern extremity of the continent? What group to the east? What islands off the northern coast? What island at the mouth of the Amazon? What strait between Tierra del Fuego and the mainland? What is the most northern point of the continent? Southern? Eastern? Western? What winds blow constantly within the Tropics? Which of these winds blows upon the coast between Cape St. Roque and Cape Frio? What part of the coast is rainless? What cape on the Brazilian coast near the Tropic of Capricorn? What desert on the western coast opposite this slope?

Surface.—Judging by the colors of the map, is most of South America high or low? Where is the most elevated portion? What mountains form it? Point out the Cumbre (*koom-bray*) Pass. (*The railroad from Buenos Aires to Valparaiso is to cross the pass.*)

Where does the lowland chiefly lie? What two highlands in the eastern part of the continent? What great plateau in the western? What lies between these high regions? What three river basins does the Central Plain comprise? What name is given to the grassy plains in the valley of the Orinoco? To the forest plains of the Amazon? Where are the pampas?

Rivers and Lakes.—What great rivers drain South America? Among what mountains does the Amazon rise? Where is the Huallaga? The Ucayali (o͞o-kä-yä-lē)? The Madeira? Tapajos? Tocantins? In what general direction do they all flow? In what direction does the Amazon flow? How many mouths has it? In what direction does the Orinoco flow? The Paraguay? Where are the three largest branches of the La Plata? By what rivers could you pass from the Orinoco to the Amazon? What lake near the northern coast? On the Bolivian Plateau?

Climate.—In what zone is all of South America north of Cape Frio and the Desert of Atacama? Through what river-valley does the equator pass? What kind of climate, then, is found in most of South America? In the most southern portion?

3. Andean Plateau.—The Andes skirt the shores of the Pacific all the way from Patagonia to Panama.

They consist of parallel ranges called **cordilleras,** of which the two most important are known as the cordillera of the Coast, and the cordillera of the Interior.

Between these are elevated plateaus, the highest of which is the **Plateau of Bolivia.**

All the way from the Strait of Magellan to the Isthmus of Panama, there is, arranged along the top of the Andes like a line of sentinels, a succession of snow-capped **volcanoes,** many of them higher than the highest peak in North America. Some of them reach the height of about 25,000 feet.

4. The Highland of Brazil extends from the La Plata northward, nearly to the Amazon. It is traversed by paralled ranges of mountains, some of which are from 5,000 to 8,000 feet high.

5. The Highland of Guiana rises abruptly from the plain between the Orinoco and the Amazon.

6. The Great Central Plain consists of the valleys of the Orinoco, the Amazon, and the La Plata.

The elevations which separate the headwaters of these streams are so low that the **three valleys** may be considered as forming **one great plain.** Hence, with trifling exceptions, all the rain that falls on the continent finds its way back to the sea through the Amazon, the La Plata, and the Orinoco.

The Great Central Plain. View on the pampas of Argentina, with the Andes mountains in the distance.

On the Brazilian Highland. This is an old plateau worn down like the New England plateau. The train of pack mules shows how merchandise is carried into more inaccessible parts of the Brazilian Highland and its products carried to the nearest railroad or to the coast.

Productions.—What minerals are found among the Andes? Where is the diamond region of South America? On what part of the coast is nitrate found? Where is guano found? (*Guano is used as a fertilizer.*)

Name some of the vegetable productions of the Valley of the Amazon. Where do you find cinchona bark? Wheat? What are some of the vegetable products of the Brazilian Highland? Where do you find the manioc? Where is India rubber found? What valuable cabinet woods are found in the Amazon Valley?

Animals.—What animals abound on the Pampas? Where is the condor found? The armadillo? The sloth? For what shell-fish is Guayaquil famed?

What curious fish in the Orinoco? What dangerous animal in the Amazon Valley? What birds and insects are found here? What sea-bird in the South Atlantic? What bird belongs to the southern extremity of the continent?


SOUTH AMERICA
PHYSICAL MAP
SCALE OF MILES
0 100 500 1000
IOWA
55045
Sq.Miles
Plains Green
Low land Dark green
Low Plateau Buff
High Plateau Dark buff
Longitude West from Greenwich
Long. 3 W. 0 East 7 from 17 Washington 27
CARIBBEAN SEA
WEST INDIES
CUBA
HAITI
PORTO RICO
JAMAICA
St. Thomas
Guadeloupe I.
Dominica
Martinique
St. Lucia
Barbados I.
Tobago I.
Trinidad I.
CENTRAL AMERICA
Lake Nicaragua
C. GALLINAS
NORTH EQUATORIAL CURRENT
ATLANTIC OCEAN
PACIFIC OCEAN
Mouths of the Orinoco R.
HIGHLAND OF GUIANA
LLANOS
C. ORANGE
EQUATORIAL CURRENT
Mouths of the Amazon R.
EQUATOR
C. SAN FRANCISCO
Chimborazo
C. BLANCO
PT. PARINA
Lobos Is.
Guano
Rio Negro
Amazon R.
GREAT FOREST PLAINS
SELVAS
HIGHLAND OF BRAZIL
C. ST. ROQUE
Fernando de Noronha I.
C. ST. AUGUSTIN
ANDEAN
RAINLESS COAST
Chincha Is.
CENTRAL PLAINS
GRAN CHACO
TROPIC OF CAPRICORN
NITRATE
St. Felix Is.
HUMBOLDT CURRENT
C. FRIO
I. de St. Catharina
BRAZIL CURRENT
CONNECTING SOUTHERN CURRENT
Juan Fernandez Is.
Mt. Aconcagua
PAMPAS
C. STA. MARIA
Rio de La Plata
C. SAN ANTONIO
C. CORRIENTES
Blanca B.
Occasional Protrusions of Icebergs
Gulf of St. Matias
Chiloe I.
Gulf of St. George
C. TRES PUNTAS
R. Deseado
C. TRES MONTES
G. of Penas
Wellington I.
Sea Weed
Albatross
FALKLAND ISLES
Wild Horses, Cattle, Pigs
AURORA IS.
Str. of Magellan
Staten I.
SOUTH GEORGIA I.
CAPE HORN CURRENT
ANTARCTIC DRIFT

Different portions of the Great Central Plain are called **Pampas, Selvas,** and **Llanos.**

Pampas.—The vast plains of the La Plata are known as Pampas. They resemble our prairies.

During the **wet season** they are clothed with a rich growth of tall grass, and clumps of thistles ten or fifteen feet high; but the long summer **droughts** destroy the vegetation, and these pampas become arid wastes.

Selvas.—The Selvas are densely wooded plains occupying a large part of the valley of the Amazon.

The **vegetation** here is of the most remarkable and luxuriant description. The **trees** are of gigantic growth and endless variety.

Air-plants and **climbing vines** of the most fantastic shapes, with leaves of extraordinary beauty, and the most brilliant and curious flowers, hang from the branches and festoon the forests.

Among the trees are the India rubber tree, the cow-tree, and palms in great variety; among them is the wax-palm, from which valuable wax is obtained.

The **Llanos** (*lyah'nōz*), or plains of the Orinoco, extend from the shores of the Caribbean Sea to the foot of the mountains. They are dotted here and there with clumps of trees.

The llanos. View in western Venezuela taken during the dry season, showing the Andes mountains in the distance.

In the **rainy season** a vast extent of these plains is overflowed, and becomes, like the borders of the Lower Nile, a boundless sea. After the flood subsides, a most luxuriant growth of grass and flowers appears.

In the **dry season** the verdant plains become barren wastes.

A bore coming up the mouth of the Amazon. It looks like a heavy surf rolling up on a sandy shore, but the breakers are caused by the meeting of the strong current and the tide.

7. Rivers.—The three great rivers, the **Amazon,** the **La Plata,** and the **Orinoco,** with their tributaries, include nearly all the large streams of South America, and constitute the grandest system of watercourses on the globe.

The **Amazon** is one of the longest and largest rivers in the world. It rises in Lake Lauricocha, in the Andes, and flows across the continent. Its length is upwards of 3,700 miles.

In some places, even far away from the sea, it is so **broad** that a vessel sailing upon it may be out of sight of land.

The Amazon drains a larger area and discharges more water into the ocean than any other river. Its **current** is perceived 200 miles out at sea; while the **tide** is felt 400 miles up its channel.

Sometimes the tide, instead of rising slowly, enters the mouth of the river as a perpendicular wall of water. This is called a **bore.** A mass of water 12 or 15 feet high rolls up the stream with a roar that is heard at the distance of 5 or 6 miles.

From the Rio Negro to the Ucayali the Amazon is known as the **Solimoens,** and above the Ucayali river as the **Marañon.**

The **Orinoco,** with its tributaries, flows through the northern portion of the Great Plain, and drains the mountain region of Guiana.

This river is connected with the Amazon by the **Cassiquiare** and **Negro** rivers, so that an Indian in his canoe may pass from the Amazon to the Orinoco.

The **La Plata** is the Mississippi of South America. Its course, unlike that of the Amazon, is not along parallels of latitude, but, like that of the Mississippi, across them.

Countries.	Area in Sqr. Miles.	Population.	Countries.	Area in Sqr. Miles.	Population.
The Guianas....	201,910	375,756	*Republics.*		
Republics.			Peru.....	695,733	4,609,999
The United States			Bolivia.....	703,400	2,181,415
of Brazil	3,218,130	14,333,915	Chile	307,620	2,712,145
Venezuela.....	593,943	2,444,816	Argentina.....	1,135,840	5,160,986
Colombia	473,202	3,916,366	Paraguay	157,000	530,103
Ecuador.....	116,000	1,400,000	Uruguay.....	72,210	978,072

MAP STUDIES.—What country occupies most of the eastern portion of South America? The southern? What countries are traversed by the Andes? Which border on the Caribbean Sea?

Brazil.—What two states do not touch Brazil? What great river drains a large part of Brazil? How near the Pacific is its source? Through how many degrees of longitude does it flow? What two rivers have their source near the town of Diamantino? What do you judge from the fact that one flows north and the other south? What river enters the Atlantic south of Cape St. Augustin? What portion of Brazil is mountainous? Where is Rio? Bahia? Pernambuco? Para? Maranhao?

Guiana.—To what nations do the Guianas belong? What are their capitals?

Venezuela.—What countries east of Venezuela? South? West? Sea on the north? Name its great river. What lake in the northwest? Island off the mouths of the Orinoco? Capital? Where is Maracaibo?

Colombia.—What countries border on Colombia? What sea north? What cape forms the northern extremity? What isthmus does it contain? What two ports on opposite sides of the isthmus? Where is Cartagena? Medellin? Barranquilla? What is the capital?

Ecuador.—What countries border on Ecuador? What circle crosses it? Name its volcanoes. Gulf off the coast. Capital. Seaport.

Peru.—Where is Peru? What cape and point on the coast? Islands off the coast? What rivers traverse Peru? Where is Lake Titicaca? Cuzco? Lima?

Bolivia.—What countries touch Bolivia? Name some of the rivers. Where is La Paz? Sucré? Mt. Sorata? Mt. Illimani?

Chile.—In what zones is Chile? On which side of the Andes? Where is Valparaiso? Santiago? Where is the island of San Juan Fernandez?

Argentina.—What river drains the northern part? Name its chief tributaries. Where is the Strait of Magellan? Tierra del Fuego? Cape Blanco? Buenos Aires? Rosario? Cordoba? Mendoza?

Paraguay.—What countries touch Paraguay? What is the capital?

Uruguay.—What countries touch Uruguay? What is the capital?

TIME A.M. when it is Noon on the Meridian of Greenwich.
SOUTH AMERICA
POLITICAL MAP
SCALE OF MILES
IOWA
55045
Sq.Miles
For every 15 degrees of longitude the difference of time is one hour.
Longitude West from Greenwich
Long. 3 W. 0 East 7 from 17 Washington 27
WEST INDIES
CARIBBEAN SEA
ATLANTIC OCEAN
PACIFIC OCEAN
CENTRAL AMERICA
CUBA
HAITI
PORTO RICO
JAMAICA
VENEZUELA
COLOMBIA
ECUADOR
PERU
BRAZIL
BOLIVIA
PARAGUAY
URUGUAY
GRAN CHACO
ANDES
EQUATOR
TROPIC OF CAPRICORN
Amazon R.
Mouths of the Amazon R.
Mouths of the Orinoco R.
GEORGETOWN
PARAMARIBO
CAYENNE
C. ORANGE
Barranquilla
Cartagena
Maracaibo
Valencia
Barquisimeto
La Guayra
Port of Spain
Colon
Panama
Medellin
Bogota
Buenaventura
Esmeraldas
Quito
Guayaquil
G. of Guayaquil
Cuenca
Iquitos
Manaos
Para
Maranhao
Ceara
Parnahyba
Pernambuco
C. ST. ROQUE
C. ST. AUGUSTIN
Bahia (Sao Salvador)
Cuyaba
Ouro Preto
Victoria
C. FRIO
RIO DE JANEIRO
Sao Paulo
Santos
Blumenau
Florianopolis
Porto Alegre
Pelotas
Rio Grande do Sul
Montevideo
C. ST. MARIA
Maldonado
Rio de la Plata
Buenos Aires
La Plata
Rosario
Cordoba
Tucuman
Corrientes
Asuncion
Mendoza
Valparaiso
Santiago
Concepcion
Valdivia
Chiloe I.
Callao
Lima
Trujillo
Chincha Is.
Arequipa
Cuzco
La Paz
Cochabamba
Sucre
Potosi
Arica
Iquique
Antofagasta
Taltal
Porto Caldera
Serena
C. SAN ANTONIO
C. CORRIENTES
Bahia Blanca
Blanco B.
G. of St. Matias
G. of St. George
C. TRES PUNTAS
C. TRES MONTES
Santa Cruz
Strait of Magellan
Staten I.
CAPE HORN
FALKLAND ISLES (To Gr. Brit.)
Port Stanley
Juan Fernandez Is. (To Chile)
St. Felix Is.
GALAPAGOS IS. (To Ecuador)
Fernando de Noronha I.
Vicinity of the STRAIT OF MAGELLAN
Enlarged Scale
PATAGONIA
Magellan Strait
Desolation I.
Clarence I.
Hoste I.
Navarin I.
Wollaston I.
Hermit I.

From north to south the La Plata, with its tributaries, the **Paraguay** and **Parana**, traverses 23 degrees of latitude. It drains the southern portion of the Great Plain.

On the western side of the Andes, all the way from Patagonia to Panama, the rivers are small in volume and short in course.

The mountains are too near the coast to allow the drainage to gather into large streams.

Review Topics.—Shape of South America. Divisions of surface. Andes. Plateau. Volcanoes. Highland of Brazil. Of Guiana. Great Central Plain. Pampas. Selvas. Llanos. The great rivers. The bore. Rivers on the west of the Andes.

L. CLIMATE, PRODUCTIONS, INHABITANTS.

1. Climate.—The larger part of South America lies within the tropics.

The **Temperature** of the lowlands is hot; that of the plateaus is variable, depending upon height above the sea-level.

A Chilean home in Santiago.

Thus, a traveler ascending the Amazon would find in the valley of the Ucayali a **spring climate** all the year. Passing on into the valley of the Huallaga (*hwal-yah'gah*), a cooler climate still would await him. Along the **Upper Amazon,** he would find himself in a superb wheat, corn, cattle, hemp, and tobacco country, with bright skies and pleasant days at all seasons. Still higher he would enter, at the height of 16,000 feet, the region of **perpetual snow.**

South of the Tropic of Capricorn the temperature is moderate. The extreme southern portion of the continent is very cold.

Moisture.—The northeast and southeast **trade winds,** which come from the sea, are laden with moisture when they reach the land. As they ascend the **eastern slope** of the Andes, they get cooler and cooler, and as they cool they drop down their moisture in the shape of rain or snow. Crossing the snowy heights of the Cordilleras, they finally reach the western slopes completely robbed of moisture. Consequently, those **western slopes** are nearly rainless.

Every drop of water has been wrung from the winds while crossing the Andes, and we see it returning eastwardly to the sea in the shape of mountain streams and majestic watercourses.

The **eastern slopes** of the Andes, therefore, are clothed with trees and verdure. The **western slopes,** for nearly 2,000 miles, in Peru, and the northern part of Chile, are parched and barren.

South of latitude 30°, however, the prevailing winds are from the west, and there the conditions are reversed; there the western side is the rainy, and the eastern the dry side.

Had the Andes been on the east coast instead of the west, tropical South America would have been a desert.

2. Minerals.—South America is one of the richest mineral regions of the globe. Gold and silver, precious stones, c and other metals abound.

3. Productions.—All the great agricultural productions world may be successfully cultivated in South America.

Cotton, sugar, tobacco, cacao, coffee, the banana, rice, the m from whose root tapioca is prepared—spices, indigo, dyestu ornamental woods abound in this region.

The **great plains** are very productive of wheat and other grai furnish pasturage for countless herds of cattle and horses.

On a stock farm in Chile. The cowboys are assembled for orders. The general superintendent is in the center.

4. The **Animals** are remarkable, and are very unlike th the other continents. Among them are the long-tailed mo armadillos; the rhea, a bird somewhat like the African o the electric eel, that shocks even horses to death; the pe that somewhat resembles a pig and is good to eat; the bo strictor, the llama, and the alpaca.

5. Inhabitants.—The native inhabita South America are called Indians. Th cupy a large part of the continent. M them are still in a savage state.

A great number of the present popu are descended from European settlers, or mixed descent.

The **people of Brazil** are chiefly of Por descent and speak the Portuguese languag nearly all the other countries of South A the inhabi are of Spanish and speak th ish language.

Review T —Climate of South Am Changes of Temperature ern part of t nent. What bring rain t America? H these winds de their moisture is the effect upon the eastern slopes? The western? What conditio of lat. 30°? South America as a mineral region. Chief products. Inhabitants.

LI. BRAZIL, GUIANAS, VENEZUELA.

1. Brazil.—Brazil is the largest and most important of South America. It is larger than the United States Alaska. Until 1889 it was an empire. It is now a republ sisting of a number of states united like our own.

Physical Features.—The northern portion occup greater part of the valley of the Amazon, and inclu **selvas.** The central and southern portions are **table-lan**

Brazil has 30,000 miles of **inland navigation.** The drains most of the country. From its length and volu Indians call it the "King of Rivers."

2. Productions.—Brazil is rich in mineral wealth, b has been done to make use of it, though gold and diamond are carried on to a considerable extent.

Silver, lead, zinc, iron, and manganese are found, but there

coal or petroleum. Monazite sand and manganese are exported. Two towns have been named from the diamond mines near them. Locate these.

The leading **agricultural** product is coffee, three-fourths of the world's supply being produced in Brazil. Cotton, sugar, tobacco, cocoa, and manioc are other leading products.

In the southern parts of the country there are important grazing and dairying industries conducted by prosperous German and Italian colonies. **Florianopolis** and **Blumenau** are growing towns in this section and export large quantities of dried beef, hides, tallow, and dairy products. Still larger quantities, however, are imported into other parts of the country from Argentina and Uruguay.

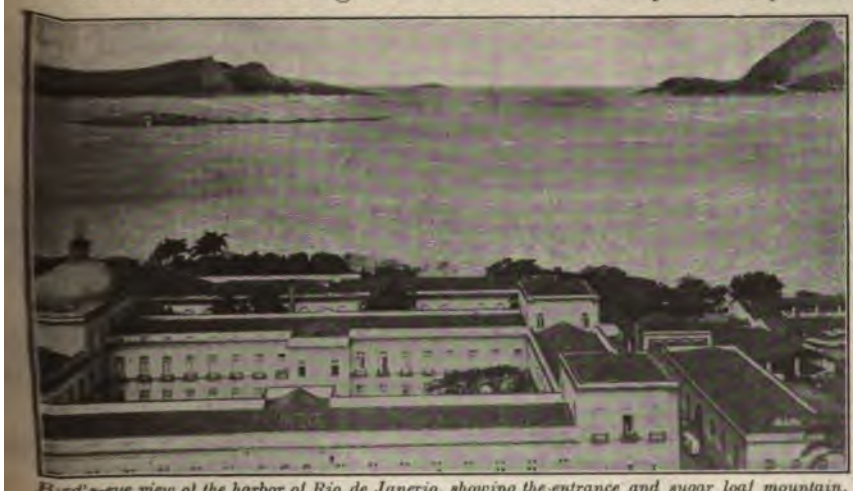
The forests of Brazil furnish our chief supplies of India rubber, besides large quantities of timber, dyewoods, drugs, and Brazil nuts.

Brazil abounds in birds and insects of brilliant colors. The shells of beetles and feathers of birds are worked into various ornamental forms by the natives. This kind of ornamental work is noted for its elegance. It forms an important export and is sold in various parts of the world.

The coffee industry in Brazil. The ripe scarlet coffee berries are gathered from the trees; they are put into a machine which removes the seed. The seeds are spread out to dry in the sun, after which the coating is removed from the seed. Then they are sorted according to size and placed in sacks for shipment. The third view shows the ships at Santos being loaded with coffee from the car.

3. Pursuits.—The principal industry is agriculture; grazing, mining, and manufacturing are of less importance. There are many sugar factories and some refineries. There are many cotton mills in the cities and a few that manufacture silk and woolen goods.

Most manufactured goods used in the country are imported from Great Britain, Germany, and the United States. Our largest imports from Brazil are coffee, rubber, and sugar. Our exports to that country consist principally of flour, kerosene, machinery, and hardware.



Bird's-eye view of the harbor of Rio de Janerio, showing the entrance and sugar loaf mountain, which is a well-known landmark. Notice the buildings along the water's edge.

Steamers ply between Para, at the mouth of the Amazon, and Nauta, in Peru, a distance of 2,200 miles, and between Cuyabá and Buenos Aires. Brazil has more than 10,000 miles of railroad open for traffic, and more than 15,000 miles of telegraph lines. It is connected with Portugal and the United States by ocean telegraphs.

4. Discovery.—Brazil was accidentally discovered by Cabral, a Portuguese navigator, in the year 1500.

He was bound to India, and, much against his will, was drifted to the westward by the trade-wind, and reached the shores of South America near Cape St. Roque. Owing to this circumstance, Brazil became a Portuguese possession, and was colonized by Portugal.

5. People and Religion.—The inhabitants are of different races—whites, Indians, who for the most part are wholly uncivilized, and negroes. The language is Portuguese, the religion Roman Catholic. Other religious denominations are tolerated.

6. Cities.—**Rio de Janeiro** (Rio) is the capital and largest city of the Republic. It has an excellent harbor and is, next to **Santos,** the largest coffee market in the world.

Bahia, the second city, exports coffee and cocoa. **Pernambuco** is in the center of the sugar district and exports raw sugar, cotton, and hides. **Para** (Belem) is the leading port in the world for the shipment of rubber. **Sao Paulo** is in the heart of the coffee district, and is connected by railroad with **Santos,** its seaport, and the largest coffee market in the world.

Nictheroy, Maranhao, Porto Alegre, and **Rio Grande do Sul** have factories for the manufacture of woolen goods and carpets. **Pelotas** and Porto Alegre have a large export trade in agricultural and dairy products. **Campos** is second in the sugar trade.

The harbor of Pernambuco, showing the natural reef which has been extended by a sea wall so as to give the city a harbor.

View of the harbor of Cayenne. Notice that it is unprotected. In the foreground is the quay, where men and merchandise are landed.

7. The Guianas.—These three provinces belong respectively to the British, French, and Dutch. They are the only portions of South America now dependent upon any European power.

8. The **scenery** is wonderfully picturesque.

Long, flat-topped **mountains** rise abruptly from the plain, with precipitous sides like walls of masonry. Of these, **Mt. Roraima** is the most remarkable. It is 18 miles long and 7,500 feet high.

In this region the **rainfall** is very great. The northeast trade-wind brings to it copious volumes of moisture.

The rivers, dashing down the mountain sides, form beautiful cascades and waterfalls. The **Great Kaieteur** waterfall makes a clear leap of 822 feet.

The **coast** country is low, flat, and swampy.

9. Life.—The air is filled with insects; the forests teem with wild dogs, tiger-cats, and armadillos; the tree tops are lively with songsters, and noisy with howling monkeys.

Exports.—Coffee, sugar, gold, and the products of the forests are the exports.

10. Towns.—The capitals are the largest towns. **Georgetown** is the capital of British Guiana, and **Paramaribo** the capital of Dutch Guiana. These are the centers of trade. **Cayenne** (whence we get cayenne pepper) is the capital of French Guiana.

11. Venezuela.—The Republic of Venezuela is about twice the size of Texas.

The early Spanish explorers, observing that the natives had built their houses on piles along the shores, called the country Venezuela, a word meaning "Little Venice."

12. Surface.—The northwest and southeast portions of Venezuela are mountainous. More than two-thirds of the country, however, consist of llanos (grassy plains), upon which millions of cattle, sheep, and other live stock feed.

A farmhouse, or hacienda, on the plateau of Venezuela.

The country is traversed by the Orinoco; its upper waters divide into two branches, one of which flows into the Rio Negro.

13. Productions.—Among the mountains are rich deposits of *gold and copper,* which are extensively worked. Salt is mined extensively, and is gathered from shallow lagoons on the shore.

The leading productions are gold, coffee, sugar, cacao, hides, and rubber.

The flora of Venezuela is wonderfully rich and varied. A species of mimosa, or sensitive plant, grows here, which spreads out its umbrella-shaped top until it attains the enormous proportions of several hundred feet in circumference. Orchids, with flowers of curious form and brilliant hue, cling to the branches of the forest trees. The "cow-tree" also is found here; the natives tap it and draw from it a milk-like beverage.

The chief exports are coffee, cacao, gold, and cattle products.

Several lines of steamers ply between Venezuela and the ports of Europe, and the United States. Nearly half the foreign trade is with this country, from which Venezuela buys cotton cloth, food products, kerosene, and lumber in exchange for coffee and asphalt.

Mountain precipice over which the trains ascend from La Guayra to Caracas, only six miles distant, but upon the plateau 3,000 feet above the sea.

14. Cities.—**Caracas,** the capital, is subject to earthquakes. It was nearly destroyed by one in 1812.

It is 6 miles from its port, **La Guayra,** and about 3,000 feet above the sea. Immediately in the rear is the "Silla" (*the saddle*), a mountain with two peaks rising to the height of 8,600 feet. These peaks may be seen many miles out at sea, and are landmarks well-known to the navigator.

Valencia, Maracaibo, and **Ciudad Bolivar,** on the Orinoco, are centers of trade.

On the island of **Trinidad** asphalt exists in such quantities as to form a lake. A great deal of the asphalt used for paving in the United States is imported from this island, which belongs to Great Britain.

Review Topics.—Rank and size of Brazil. Government. Surface. Inland navigation. Drainage. Mineral products. What is said of the coffee of Brazil? Other agricultural products. Sugar. What do the forests yield? For what are cattle chiefly raised? Principal pursuits. Commercial facilities. Discovery. People and religion. Rio. Para. Bahia. Pernambuco. To what powers do the Guianas belong? Their scenery. Waterfalls. The coast country. What is said of the animal life? Chief exports. Towns. What do we get from French Guiana? What is the size of Venezuela? Why so called? What of the surface? Great river. Mineral products. Agricultural. Exports. What is said of Caracas? Other cities.

LII. THE ANDEAN STATES.

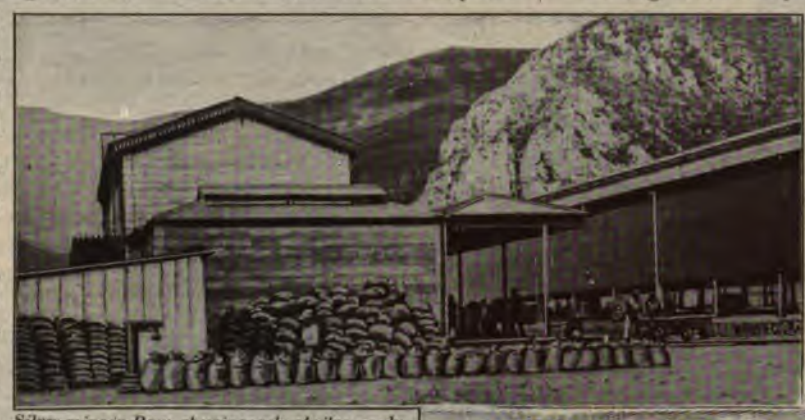
1. The **Andean States** are Colombia, Ecuador, Peru, Bolivia, and Chile. They comprise a region very remarkable for its volcanoes and earthquakes.

2. Chile lies altogether on the western slope of the Andes. It is for the most part in the South Temperate Zone.

3. Colombia, Ecuador, Peru, and Bolivia are within the Tropics, and are similar in surface, climate, and vegetation.

4. **Physical Features.**—Colombia, Ecuador, and Peru lie on both sides of the Andes. Each of them includes a narrow coast plain, a large area of mountains and table-lands, and a portion of the low forest plain at the eastern base of the mountains. Bolivia resembles its companion states, except that it has no seacoast.

5. **Climate and Vegetation.**—These states have every variety of climate and vegetation that can be found between the polar regions of eternal frost and the tropical regions of everlasting summer.



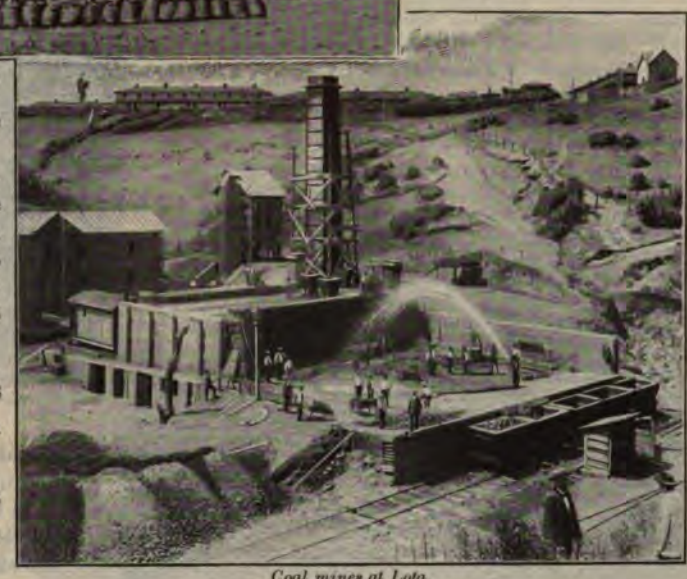
Silver mine in Peru, showing sacks of silver ready for shipment.

Here, seated at the foot of a mountain, and surrounded with the luscious fruits of the tropics, one may cast his eyes up toward the snow-capped peak above him, and take in at one view the **whole range** of the vegetable kingdom.

Noted among the products is **cinchona,** or Peruvian bark, the bark of the cinchona tree. It yields the valuable medicine, quinine. The tree is indigenous to the eastern slopes of the Andes, north of latitude 23° S., and to no other part of the world. It is successfully cultivated, however, in India and Java, Central America, and the West Indies.

6. **The Mineral Resources** of the Andean States are unsurpassed. They resemble those of our own Pacific Highland.

7. **Trade.**—The rugged heights of the Andes present a formidable barrier to communication and commerce between the countries on their opposite sides.



Coal mines at Lota.

Two **railways,** however, already cross these mountains and connect Bolivia with the Pacific; another is being constructed from Chile into the Argentina; another leads from Callao to Pasco along the head-waters of the Amazon. But transportation is in general carrried on by means of mules or llamas, and is exceedingly tedious and dangerous.

The **llama** is the camel of the New World. A million of them are employed as beasts of burden in Bolivia alone.

8. **Colombia.**—The Republic of Colombia is well situated for commerce, as it has long strips of coast and good harbors on both the Caribbean Sea and the Pacific Ocean. In the llano region great herds of cattle are kept.

Colombia formerly included the Isthmus of Panama, but recently Panama declared its independence, and set up a separate government of its own.

9. **Productions.**—Silver, gold, platinum, and precious stones abound. The emeralds are the purest in the world.

The agricultural productions of every climate may be raised here.

The chief exports are coffee, gold, silver, live-stock and hides, tobacco, and India rubber. Coffee, cocoanuts, hides, and bananas are sent to the United States in exchange for our flour, cloths, meats, coal, and kerosene.

The forests of the low plains contain many varieties of palms and bamboo. Higher up in the mountain regions grow the cinchona and the tree ferns.

10. **Cities.**—**Bogotá,** the capital, is situated about 9,000 feet above the sea level. It has two rainy seasons annually, and its climate all the year round is delightful.

Medellin, Cartagena, and **Barranquilla** are important commercial towns. **Bucaramanga** and **Cucuta** are large coffee centers. A considerable trade passes down the Magdalena.

Punta Arenas (sandy point), Chile, at the southern end of the Andes. The most southern town in the world.

11. **Ecuador.**—Ecuador is the Spanish for equator. This Republic is crossed by the Equator; hence its name.

It contains a remarkable group of volcanoes.

Among them is the dome-shaped Chimborazo, one of nature's most imposing structures, standing at the enormous elevation of four miles above the level of the sea. I have seen this mountain by moonlight at a distance of ninety miles.

Another of this wonderful array of burning mountains is the grand and terrific **Cotopaxi.** The noise of its eruptions is said to have been heard at the distance of six hundred miles.

The **condor,** the largest bird of flight in the world, dwells among the rugged heights of the Andes. He is fond of feeding upon the shell-fish found on the beach of Ecuador, and will leave his home, 100 miles distant, twice a day to secure his meals.

12. **Productions.**—Ecuador contains deposits of gold, of emeralds, quicksilver, iron, and copper and coal. Of agricultural products, the most important is cacao.

The principal exports are cacao, coffee, vegetable ivory, gold, Panama hats, rubber, and hides. The imports are cotton and woolen goods from Europe, and machinery, flour, lumber, and kerosene from the United States.

13. **Cities.**—**Quito,** the capital and largest city, is situated

Market in Quito, Ecuador.

nearly two miles above the level of the sea.

No less than eleven peaks, all white with their snow-caps, are in full view from the *plaza*, or great public square of this city.

Guayaquil, the principal seaport, has extensive manufactures.

The **Galapagos,** or Turtle Islands, so called from the gigantic tortoises found here, belong to Ecuador.

Review Topics.—Name the Andean States. Which lies entirely west of the Andes and mainly in the temperate zone? Which are within the Tropics? In what are these alike? Physical features. Climate and vegetation. What is said of the cinchona tree? The mineral resources. How is trade carried on across the Andes? The llama. How is Colombia situated? The Isthmus? The railway. Mineral products. Agricultural. Exports. Bogotá. Other towns. Why is Ecuador so called? Chimborazo. Cotopaxi. The condor. Mineral productions. Agricultural. Exports. Quito. What is its port? Galapagos Islands.

LIII. PERU, BOLIVIA, AND CHILE.

1. Peru.—Peru has been famed from the earliest times for the almost fabulous wealth of its mines.

Silver and gold, quicksilver, copper, lead, and iron abound. The silver mines of Pasco are among the most celebrated in the world.

Railroad on the western slope of the Andes in Peru, 13,000 feet above sea level, showing the barren regions, with Mt. Misti and Mt. Chambarri towering above it.

Many years ago silver was used in Peru as the baser metals are with us; tires of carriage-wheels, and the commonest household utensils were of solid silver. I have seen there, in the early days of the Republic, Indians sitting at dinner on the dirt floor of their hut, and eating, without the aid of knife, fork, or spoon, out of a massive silver dish.

2. Rainless Region.—West of the Andes Peru is nearly rainless.

I have seen wheat piled up on the wharves of Callao, lying there for months together in the open air, with no more protection from the weather in that rainless port than if it had been a pile of paving-stones.

The sea along this rainless coast is the most gentle part of the ocean. It is seldom ruffled by a storm. *Rainless shores* are washed by *stormless seas.*

Western Peru is supplied with water, both for drinking and for irrigating the fields, from the mountain streams formed by the melting snows of the Cordilleras. Cultivation depends almost entirely upon irrigation.

3. Productions.—This rainless country, wherever there is water, produces the most beautiful flowers and delicious fruits.

The cotton-plant, tobacco, and the sweet potato grow all the year, and the tobacco produces continuously. Medicinal plants, such as the coca shrub and the cinchona tree, and valuable dye woods, are found in the forests. Large quantities of rubber also are gathered and sent down the Amazon to Para.

The chief exports are silver ore, sugar, cotton, coffee, guano, and the wool of the alpaca. All these products except the first are exported to some extent to the United States in return for our machinery, lumber, flour, cars, and kerosene.

Peru is one of the leading South American States in the construction of railways and telegraphs.

Early Civilization.—When Europeans first visited South America, Peru was occupied by a highly civilized tribe of Indians. The remains of their great road from Quito to Cuzco, and thence along the plateau of the Andes into Chile, are still to be seen. This road was 1,500 miles long and 40 feet wide. In constructing it, ravines were crossed by suspension bridges, and galleries were cut through the rock.

In Cuzco was the great temple of the sun, which, in its day, far surpassed in costliness of decoration any edifice in Europe.

A wire bridge over a mountain stream on the eastern slopes of the Andes in Peru.

4. Cities.—*Lima,* the capital, has a noble cathedral, a museum, and a national library. Its houses are built of sun-dried clay. Earthquakes have desolated it repeatedly. It has railways to Callao and other points.

Callao is the port of Lima.

Arequipa (*ar-e-ke'pah*), the second important city, is noted for its manufacture of gold and silver tissue, and cottons and woolens. Like Lima, it has been laid in ruins several times by earthquakes.

The great volcano of Misti, a truncated cone, rises on the outskirts of the city to the height of nearly 20,000 feet.

Pasco, nearly 14,000 feet above the sea, is the highest city in the world.

5. Bolivia was named in honor of the South American "Liberator," Bolivar, to whom it owes its independence.

6. Surface.—This republic is very mountainous, and completely shut in from the sea. Western Bolivia contains the highest plateaus and ridges of the Andes. Lake Titicaca is partly in Bolivia. It is nearly 13,000 feet above the level of the sea. Here the pressure of the atmosphere is greatly diminished, and evaporation is so rapid that the water is taken up from the lake as fast as the rivers pour it in. The lake is navigated by steamers.

Street in Lima.

7. Climate.—East of the Andes the country is generally well watered and fertile, but dry on the west of them.

Valparaiso. Notice the hills upon which the city is built, and the narrow plain along the water-front. There is a quay at which ships discharge cargo. The harbor is so crowded that most of the ships lie at anchor, and freight and passengers go to them on lighters and small boats.

Valparaiso, the port of Santiago, and connected with it by railway, is the chief seaport of South America on the Pacific.

Review Topics.—For what is Peru noted? Climate. Farming. Agricultural productions. Exports. Rank in railways. Who were the ancient inhabitants? Describe their great highway. Temple. What is said of Lima? Callao? Arequipa and its volcano? Pasco? Why was Bolivia so named? How is it situated? Lake Titicaca. What is said of its elevations? Minerals? Coca. Exports. Where are the most important cities? How connected with the Pacific? What is said of La Paz? Sucré? Cochabamba? Potosi? How is Chile situated? What part is desert? What is said of the rainfall? What makes Chile the granary of South America? The mineral products. Agricultural. Exports. Public Education. What island belongs to Chile? Santiago. Valparaiso. The Araucanian Indians.

LIV. THE LA PLATA STATES.

1. The La Plata States include **Argentina, Paraguay,** and **Uruguay.** With the exception of Patagonia, which now forms a part of Argentina, they all lie in the valley of the Rio de la Plata.

Rivers.—The La Plata, with the Parana and Paraguay, forms a continuous water route for the commerce of this valley. Large steamers ascend far above Asuncion, while smaller ones penetrate to Cuyaba, in the heart of Brazil.

The valley of the La Plata has one of the finest climates in the world, free from frost and remarkably healthful.

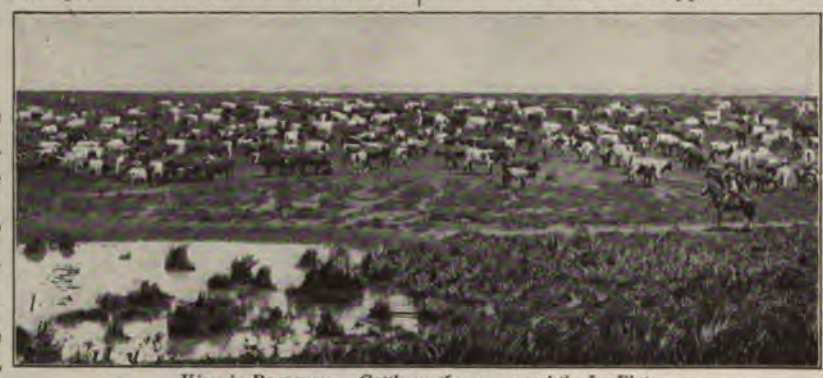
2. Products.—The greater part of this region is a fine agricultural and grazing country. It is one of the world's greatest wool producers and a leading section in the export of beef, mutton, and other animal products.

Its soil is adapted to the cultivation of wheat, corn, coffee, tobacco, sugar, rice, cacao, hemp, flax, indigo, and manioc.

Great numbers of cattle feed on the grassy pampas.

The **exports** of the La Plata States are chiefly hides, horns, tallow, mutton, wool, wheat, tobacco, and yerba maté (*mah'tay*).

Argentina imports textiles, clothing, pottery, glass, and machinery from Great Britain and Germany. From the United States she receives farming machinery, oil, lumber, twine, wire, railroad supplies, tools, and hardware. Next to animal products and wheat, flax-seed and sugar are the most important exports. We buy of Argentina raw wool, hides, goatskins, and the bones, horns, and hoofs of the cattle slaughtered. What use do we make of these things?



View in Paraguay.—Cattle on the pampas of the La Plata.

3. The Inhabitants are Indians or descendants of European races. They are Roman Catholic in religion.

The herdsmen, who live on the pampas and are called **gauchos,** are most expert horsemen. They chase the ostrich, the wild horse, and the bullock, and throw the bola, a kind of lasso, with such precision that they can catch the animal by the foot while it is lifted in flight.

4. Argentina is the largest state in South America, except Brazil. It is a republic. It contains the pampas.

Ships loading with beef at one of the wharves on the La Plata river at Buenos Aires.

About 30,000,000 cattle and 75,000,000 sheep are pastured on the pampas. The public lands are sold in large tracts to the ranchmen, who divide them into sections which they fence with wire. A few men can thus take care of large herds. The ranch owners are mostly Englishmen and Scotchmen. The best cows are kept for dairy purposes. The best beef cattle are shipped alive to Europe. Fat sheep and lambs are also sent in the same way. But the live animals exported are equal to only one-sixteenth of the frozen and dried beef. The largest refrigerating plant for meat in the world is at Buenos Aires. A million carcasses of beef and three million of sheep are frozen and exported annually.

The **population** is largely foreign. The liberal policy adopted toward settlers attracts many immigrants from Southern Europe. Argentina has more miles of railway than any other South American country. In educational advantages it excels all the other states of South America except Chile.

5. Cities.—Buenos Aires (*Bo'nus A'riz*), the capital, is also the chief city of South America and seaport of the La Plata basin.

Numerous lines of steamers connect it with foreign ports.

Cordoba, La Plata, and **Rosario** are important towns. **Tucuman** stands in the garden spot of the Republic.

Mayo Street, one of the principal business thoroughfares of Buenos Aires, the metropolis of the continent.

MAP STUDIES.—What ocean on the north of Europe? On the west? What great sea on the south? How is the Mediterranean connected with the Atlantic? What two seas form parts of the southeastern boundary of Europe? How do you pass by water from the Mediterranean into the Black Sea?

Where is the Strait of Messina? The Adriatic Sea? The bay of Biscay? What sea north of the Atlantic Plain? What sea separates the Scandinavian Peninsula from the Great Plain? What three gulfs connected with the Baltic? What sea indents the Arctic coast of Europe? Where is Cape Clear? Cape Matapan? North Cape?

Name the great northern peninsula of Europe. What one on the extreme southwest? Southwest of the Adriatic? What does it resemble in form? What peninsula east of the Adriatic? Between the Baltic and the North Sea?

Surface.—What portion of Europe is occupied by the Great Low Plain? Where is the Atlantic Plain? Where are the Steppes? The Black Lands? Where is the lowest portion of the continent? What mountains border the Low Plain on the northeast? What plateau on the northwest? What two ranges in this plateau? What mountains between the Caspian and the Black Sea? What mountains on the southwest of the plain? Where are the Valdai Hills?

Where is High Europe? What plateau forms the southwest extremity? What mountain chain on the northern border of this plateau? In what direction do the mountain ranges of this peninsula lie? Where are the Alps? What is the general direction of this chain? What mountains are in the peninsula of Italy? What mountain chains in the plateau south of the Danube? Where is Mt. Blanc? Where do you find volcanoes? Geysers? What plain between the Danube and the Carpathians?

Rivers and Lakes.—What river forms part of the eastern boundary of Europe? What large river rises near the Valdai Hills and enters the Caspian? What river flows into the Sea of Azov? What river that drains the Black Lands enters into the Black Sea? What river drains Central Europe and enters the Black Sea? What river enters the Adriatic Sea? What river flows from the Apennines into the Mediterranean? What river enters the Gulf of the Lion? In what two directions do the rivers of the Spanish Plateau flow? In what general direction do the rivers of the Atlantic Plain flow? Into what do the Oder and Vistula flow? What river enters the Gulf of Riga? What important one flows into the White Sea? What one into the Arctic Ocean?

Minerals.—What minerals in the mineral region of Central Europe? Among the Ural Mountains? Caucasus? Carpathians? Apennines? In Sicily? The Spanish Peninsula? British Islands? Scandinavian Peninsula? Where is amber found? Petroleum? Quicksilver?

Vegetation and Animals.—What do you find on the shores of the Arctic Ocean? Where is the northern limit of wheat? Of the vine? Of maize? In what parts of the British Isles does wheat not mature? Where does tobacco grow? The almond? Olive? Fig? Orange and lemon? Grape? The mulberry? Currant? In what waters are found the whale? The sturgeon? The salmon? The sardine? Coral? What fish near the British Isles? The Scandinavian Peninsula? What region contains fur-bearing animals? In what region do we find the camel?

The low mountains of the north in Scotland. Loch Lomond, a glacial lake.

EUROPE.

LV. PHYSICAL FEATURES.

1. Excepting Australia, Europe is the **smallest** of the continents, and lies chiefly in the Temperate Zone. It is deeply indented by arms of the sea, and has therefore great facilities for commerce.

The **peninsulas** of Greece, Italy, and Spain and Portugal project from its southern edge, and the Scandinavian peninsula from the northern.

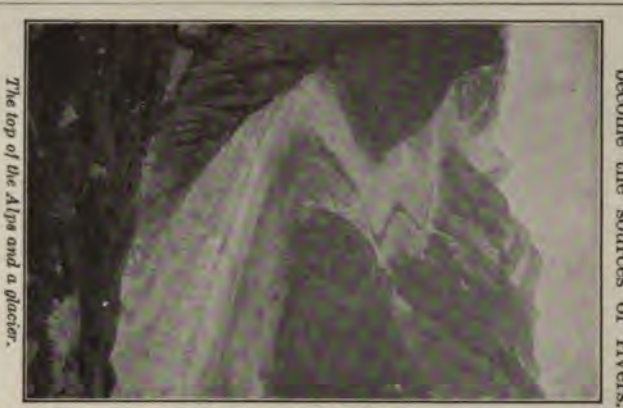
Europe and Asia really form one great body of land which is sometimes called **Eurasia.**

2. Surface.—Europe consists of a mountain region in the south and a great central plain, bordered on the east and northwest by mountains. The northwestern coast is slowly sinking. The North and Baltic Seas and the English channel were once part of the central plain.

Mountain Ranges.—The principal ranges are The Pyrenees, The Alps, The Balkans, The Carpathians, and The Caucasus, which extend across Southern Europe eastward into Asia. The low border ranges on the northwest extend through the Scandinavian Peninsula and through Great Britain.

The **Alps** are the highest mountains wholly in Europe. They are celebrated for their snow-clad peaks, beautiful lakes, and glaciers. The loftiest peaks are about 15,000 feet above the sea-level, and are crowned with perpetual snow.

In the high valleys of these mountains are immense masses of ice, called **glaciers,** which are formed from the snow. They are always moving slowly down the mountains, and, melting at the lower end, become the sources of rivers. The most famous is the **Mer de Glace** (*sea of ice*). These and other mountains of southern Europe are still young, and have not been worn down like the older mountains of northwestern Europe.



The top of the Alps and a glacier.

The Great Plain, or lowland, extends from the Ural Mountains westward to the Bay of Biscay, and from the Arctic Ocean southward to the Black Sea.

Russia constitutes a large portion of it. That part of it which borders on the North Sea and the Bay of Biscay may be designated the **Atlantic Plain.**

3. Rivers.—The rivers of Europe are much smaller than those of America.

The border of the Great Central Plain, near Zaandam in Holland.

The mountain ranges of Europe extend some east and west, some north and south; they therefore divide the continent into a great number of **small** river basins.

The mountains of North and South America, on the contrary, have a nearly uniform direction, and divide those continents into river basins which are **few** in number and **immense** in size.

The Danube, the Rhine, the Rhone, and the Po rise in the Alps and flow into the Black Sea, the North Sea, the Mediterranean, and the Adriatic respectively.

The principal rivers of the Great Plain have their origin in and near the **Valdai Hills.** The Volga is the longest river in Europe (2,300 miles).

The Rhine coming down through the plateaus of Germany. Across the river is the city of Coblentz. On this side is Ehrenbreitstein, the famous castle and fortress. A bridge crosses the Rhine here.

The Rhone at Lyons, France.

The Danube passing through the great plains of Hungary, above Budapest. The watermills which you see are built on boats anchored in the river. Between two boats is the great water wheel, which is turned by the force of the current and furnishes power to grind grain.

4. Climate.—Stretching from the heated waters of the Mediterranean up to the Arctic Ocean, Europe has every variety of climate, except that of equatorial regions.

Western Europe, from the North Cape to the Strait of Gibraltar, has a milder climate than Eastern Europe, and closely resembles that of the western coast of North America.

This is owing to the warm sea winds from the southwest, and to the influence of the great oceanic flow, which begins in the Gulf Stream and ends in the Atlantic Drift. This current is clearly perceptible at the Shetland Islands and off the coast of Norway.

In the harbor of **Hammerfest,** within the Arctic circle, ice rarely forms. On the other hand, the Gulf of **Finland,** in Eastern Europe, though it lies 12° of latitude farther to the south, is closed with ice every year from late in the fall till early in the summer.

The **British Isles** and **Labrador** lie between the same parallels of latitude; but, while the English winter is so mild that the pastures are green all the year, in Labrador the harbors are ice-bound, and the ground is covered with snow for nine or ten months in the year.

The climate of **Southern Europe** is tempered by the tepid waters of the Mediterranean and the hot winds from the Sahara. Its summers are long and its winters mild and short.

5. Minerals.—The mountainous portions of Europe are rich in minerals. Coal, iron, and salt, lead, tin, zinc, copper, and quicksilver abound.

6. Vegetation.—Southern Europe is the land of the vine and the fig, the olive, the lemon, and the orange, and of rice and other **semi-tropical** grains.

In Central Europe, between the Alps and the Valdai Hills, are

MAP STUDIES.—What countries occupy the three peninsulas in the Mediterranean? What three countries of Northern Europe are peninsular? What great country consists of islands? What are the great countries of Central Europe? What countries border on the Black Sea? The Adriatic? What are without seacoast?

Russia.—What mountains form part of the eastern boundary of Russia? The southern? What peninsula projects into the Black Sea? Where is Finland? Lapland? Where is the Gulf of Finland? Of Riga? What islands north of Russia? Where does the Volga rise? Into what does it flow? The Don? Dnieper? Dniester? Vistula? Dwina? Onega? Petchora? Where is Lake Ladoga? Lake Onega? What is the capital? Where is it? Where is Cronstadt? Where is Moscow? Warsaw? Saratov? Nizhni-Novgorod? Kazan? Archangel? Astrakhan? Odessa? Baku?

Sweden and Norway.—What peninsula do these countries occupy? Where is the Gulf of Bothnia? The Baltic Sea? The Cattegat? What islands off the coast of Norway? Where is the North Cape? The Naze? Where are Lakes Wenner and Wetter? What is the capital of Norway? Of Sweden? Where is Hammerfest?

Portugal.—Where is Portugal? Where is Cape St. Vincent? What are the three chief rivers? Name the capital. On what river? Where is Oporto?

Spain.—What mountains separate Spain from France? What strait separates Spain from Africa? Mountains along the northern coast? The southern coast? Name the rivers that flow into the Atlantic. Into the Mediterranean. Islands off the eastern shore. The capital. Where is Seville? Valencia? Barcelona? Saragossa? Malaga? Cadiz? Almaden? Palos? The Republic of Andorra? Gibraltar?

Italy.—What mountains on the north? Sea on the east? West? South? Where is Sicily? Sardinia? What small island between Italy and Corsica? Where is Cape Passaro? Gulf of Taranto? Gulf of Venice? Of Genoa? Where is the River Po? Tiber? What famous city on the Tiber? Where is Turin? Naples? Milan? Venice? Genoa? Florence? Palermo? What volcano near Naples? In Sicily? What volcano north of Sicily? What island south of Sicily? To what power does it belong?

Greece.—What sea on the east, west, and south? What country on the north? What islands east? What islands on the west? What large island on the south? Where is Cape Matapan? What is the capital? Where is Corinth? Piræus?

Turkey in Europe.—What countries on the north? Sea to the east? Country and sea on the south? What waters on the west? What island south of the archipelago belonging to Turkey? What is the capital of Turkey? Where? Where is Adrianople? Saloniki?

Servia, Roumania, Bulgaria, Montenegro.—Where is each of these States? Which are mountainous? Which are mostly plains? What mountain range has given a name to these states? What river separates Bulgaria and Roumania? Where is Belgrade? Bukharest? Sofia? Cettinje?

Trade Routes.—On what bodies of water would you pass in going from Liverpool to Suez on the Red Sea? From Queenstown to London? St. Petersburg to London? Odessa to Marseilles? Naples to Alexandria? Athens to Belgrade? London to Cologne? London to Marseilles? Odessa to Lyons? Hammerfest to St. Petersburg? Archangel to Hamburg? Venice to Alexandria?

How would you travel from Paris to Constantinople? From Berlin to St. Petersburg?

A castle in Bavaria, near Munich.

found the **deciduous** trees, the grains and orchard fruits and vegetables of the temperate zones.

In Northern Europe we find **forests** of pine, fir, and spruce, and the hardy grains, with the dwarfed plants, mosses, and lichens which belong to the Arctic region.

The extreme northern part of the Great Plain bordering the Arctic Ocean is, for nine or ten months, one continuous expanse of snow and ice. In the summer the ice melts and makes swamps, lakes, and marshes. The ground, however, is never thawed deeper than three feet, and the largest plant is a willow that grows about one finger high.

7. Animals.—The domestic animals common in our own country are found in nearly all parts of Europe.

The forests abound with deer and wild boars, hares, foxes, and **fur-bearing** animals, as the sable, the marten, and mink. In the high Alps and Pyrenees are found the **chamois** and **wild goat,** and in Northern Europe the **reindeer,** which furnishes a large part of the food and clothing of the inhabitants of Lapland.

8. Contrasts with America.—Unlike America, Europe is an old country; its nations count their ages by centuries.

Its **resources** are well developed and it overflows with population. It contains about four times as many inhabitants as the United States, and more than ten times as many as the whole of South America.

A palace in Venice.

In Europe, **land** is dear and **labor** abundant. In America, land is comparatively cheap and labor comparatively scarce.

Hence it is easier for a working man to make a living in America than in Europe. It is because of this that there is such a large **migration** from the Old World to the New.

To an American who visits Europe for the first time, the most striking features are the high state of improvement of the country, the excellence of the roads, the vast extent of cultivated lands in proportion to woodlands, the number of cities and villages. At one time the kings and nobles of Europe owned all the land and lived in palaces and castles. The great masses of the people were very poor. Many of these old palaces and castles are still standing in different parts of Europe, especially along the Rhine, in northern France, and in England.

Pierrefond Castle, France.

9. Inhabitants.—The inhabitants of Europe, in the main, are Caucasians. They may be classified as belonging mainly to three great families, the **Teutonic, Latin,** and **Slavonic.**

An old castle in Sussex, England.

The **Teutonic** family includes the people of Germany, Scandinavia, and England. Russia is the home of the Slavonic branch, but there are other races also in European Russia. The **Latin** races include principally the people of Spain, France, and Italy.

The Caucasian race originated in Central Asia. Certain tribes from time to time wandered to Europe and settled in different parts of that continent. Separated by mountains and other barriers, there was little communication between them. They had no written language, and in the centuries that passed, each developed a language for itself, so that these tribes became different nations. But many words, like father and mother, are nearly alike in all these languages.

Review Topics.—Compare Europe in size with the other continents. What gives it the great facilities for commerce? Principal mountain ranges. The Alps. Their glaciers. The Great Plain. The Atlantic Plain. Compare in size the rivers of Europe and the New World. In what directions do the mountain ranges of Europe extend? Of America? What effect on river basins? Principal rivers of Europe? Describe the Volga. What varieties of climate has Europe? Compare the climates of Eastern and Western Europe. Of Hammerfest and the Gulf of Finland. Of the British Islands and Labrador. Climate of Southern Europe. What minerals abound? Describe the vegetation of Southern Europe; Central; Northern. The animals. Contrasts with America. Inhabitants.

Political Divisions of Europe.	Area.	Population.
United Kingdom	121,391	42,789,552
England and Wales	58,324	33,763,434
Scotland	30,405	4,627,656
Ireland	32,360	4,398,462
Russia in Europe	2,095,616	106,264,136
Sweden	172,876	5,221,291
Norway	124,129	2,240,032
Spain	194,783	18,618,086
Portugal	35,490	5,423,132
Italy	110,550	33,218,328
Greece	25,014	2,645,175
Turkey	65,350	6,130,200
Roumania	50,720	5,956,690
Servia	18,630	2,492,882
France	207,054	38,961,945
German Empire	208,830	56,367,178
Prussia	134,603	34,472,509
Bavaria	29,282	6,176,057
Wurtemberg	7,528	2,169,480
Saxony	5,787	4,202,216
Netherlands	12,648	5,430,981
Belgium	11,373	6,985,219
Austria-Hungary	141,333	45,405,267
Switzerland	15,976	3,315,443
Denmark	15,388	2,464,770

THE BRITISH ISLES

SCALE OF MILES
0 10 30 50 70 90

SIZE OF DELAWARE
2,050
Square Miles
45 7/10 Miles Square

SHETLAND ISLANDS AND ORKNEY ISLANDS
(Same Scale as large Map)

LONDON and Vicinity
SCALE OF MILES
0 1 2 3 4 5

9. Great Britain is the foremost commercial country on the globe. For centuries her sailors and merchants have been establishing trade routes in all parts of the world. Her merchant vessels are equal in number to those of all other nations combined, and carry not only her own goods, but nearly half the goods of the other nations that lie along her routes of trade. This carrying trade is a great source of wealth to her. The navy of Great Britain is larger than those of Germany, France, and the United States put together.

Room of the same factory where these castings are being put together so as to form the frame of a machine for spinning cotton thread, such as is shown on page 56.

Building textile machinery at Manchester, England, showing the foundry where iron is melted in a furnace and run into molds which give each piece its proper shape. When cold, these castings are finished by machinery.

10. The Government of Great Britain is a constitutional monarchy. The crown is hereditary.

The executive power is vested in the **Cabinet,** which consists of the **Ministers,** or heads of the several departments of the Government.

Parliament is the legislative branch of the Government, and corresponds to our Congress. It consists of the House of Lords and the House of Commons. The members of the latter are chosen by the people. The members of the House of Lords are nobles and bishops.

11. Religion and Education.—The majority of the people profess the Protestant religion.

The **Episcopal Church** is the Established Church in England; the Presbyterian in Scotland; both are endowed by the Government. The majority of the people in Ireland are Roman Catholics.

Education is compulsory and there are public schools throughout Great Britain.

12. Cities.—London, the capital of the United Kingdom, is the largest city in the world, and the first in commercial importance.

On the Thames, fifty miles from its mouth, it is in the heart of England, and yet a great seaport with a short waterway to the mainland of Europe. Its docks and piers extend along the river for twenty miles. Its chief imports are coffee, tea, spices, and cocoa, and its exports are manufactured articles. Its manufactures are varied and extensive.

London is the great money center of the Empire and the world, and trade balances between foreign merchants are paid through its banks. Distances east or west around the world are measured by all civilized nations from the Meridian of Greenwich at London, and all ship chronometers carry Greenwich time.

It is situated on both banks of the Thames, and covers an area nearly twice as large as the District of Columbia. It has more than 6,000,000 inhabitants. Parliament sits, and the king holds his court, in London. Some of the most **noted** public **buildings** in London are the House of Parliament, Westminster Abbey, the Tower, and the British Museum.

Liverpool ranks next to London in commerce. It is the great cotton market of Europe. **Manchester** is the chief center of cotton manufacture.

Birmingham is in the "Black Country"—so called from the number of its coal and iron mines. It is the great iron market of England.

Leeds is widely known for its iron and steel industries, and for the manufacture of woolens and clothing; **Bradford** for broadcloth and worsted goods of every sort; **Nottingham** for laces and hosiery; and **Newcastle** for coal trade, glass bottles, and chemicals.

Sheffield is celebrated for its cutlery, steel, and plated

[Copyright, R. Y. Young.]

Piccadilly (cut 1) and Fleet Street (cut 2), two famous old streets in London which are so narrow and crowded that street cars are not used. Notice the omnibuses in which people ride. At the head of Fleet Street can be seen the dome of St. Paul's Cathedral.

MAP STUDIES.—Name the British Isles. What three divisions occupy the largest of them? Where is Scotland? Wales?

England and Wales.—What sea on the east? Channel and strait between England and France? What waters between Great Britain and Ireland? What hills between Scotland and England? Where is Anglesey? Holyhead? Isle of Wight? Where are the Scilly Isles? Channel Islands? Where is Morecambe Bay? Cardigan Bay? Bristol Channel? The Wash? Menai Straits. What part of England is most mountainous? Where is Mt Snowdon? What is the capital? On what river? Where is Liverpool? On what river? Where is Manchester? Salford? Bradford? Sheffield? Nottingham? Leicester? Brighton? Portsmouth? Birmingham? Leeds? Bristol? Newcastle? Oxford? Cambridge? Cardiff?

Scotland.—By what ocean is Scotland nearly surrounded? What channel separates it from Ireland? What sea on the east? What islands on the north? Where is the Minch? Where are the Shetland Islands (see map of Europe)? Where are the Hebrides? Staffa? *Staffa contains Fingal's Cave. The bays on the Scotch coast are called Friths or Firths.* Where is the Frith of Forth? Tay? Moray Firth? Dornoch? Solway Firth? What hills in the central part of Scotland? Where is Ben Nevis? *This is the loftiest peak in Great Britain, and is about* 4,400 *feet high.* What canal crosses the northern part of Scotland? Where is Edinburgh? Glasgow? On what river? *This river is famed for the ocean steamships built upon it.* Where is Dundee? Inverness? Aberdeen? Dumfries? Paisley?

Ireland.—What bodies of water separate Ireland from England? From Scotland? What ocean west and south? Which portions of the island are mountainous? Where are the Wicklow Mts.? Where is Cape Clear? *Several of the Atlantic cables terminate on the Irish coast at Valentia I.* Where is it? Where is Dublin? Belfast? Cork? Queenstown? Londonderry? Limerick? Maynooth?

ware. **Southampton, Bristol,** and **Hull** are important seaports.

Portsmouth and **Chatham** are among the chief naval stations.

At **Oxford** and **Cambridge** are celebrated universities.

Glasgow is the chief manufacturing center, and the largest city in Scotland. It is the second largest in Great Britain.

Clarence Dock, Liverpool. The rise and fall of the tides in the river Mersey is so great that immense stone docks have been built, into which the ships pass at high tide through gates like the gates of a canal. The gates are then closed, and the water level in the dock remains the same. Passengers are landed at a floating stage.

It is celebrated for its cotton goods, chemicals, iron and steel steamships, and marine engines.

Edinburgh, on account of its institutions of learning and its historic past, is the most illustrious city in Scotland. It is noted for the publishing of books and maps.

Dundee is extensively engaged in the manufacture of linens, and **Paisley** in the manufacture of shawls and carpet and cotton thread.

Inverness stands at the northern terminus of the Caledonian Canal, which makes a water route from the Atlantic to the German Ocean.

Cardiff, the chief city and port of Wales, has a great coal trade.

13. Ireland, in general, is a rolling country. Much of the coast region contains mountain ranges of slight elevation.

In the southwest are the far-famed lakes of Killarney.

The climate is very moist and mild, because Ireland is the first of the British Isles to catch the west winds as they come from the sea, warm and laden with moisture.

Rainfalls are frequent, especially in the southwest. The fields, even in winter, are always green, and Ireland is therefore called the "Emerald Isle."

A shipyard at Glasgow on the river Clyde, showing an immense passenger steamer nearly ready for launching.

14. Productions.— Ireland is deficient in mineral resources. Coal is scanty, and peat is often used for fuel.

The famous vale of Avoca, in County Wicklow, Ireland, one of the most picturesque spots in Europe.

The most important **crops** are oats and potatoes. The latter are the chief article of food among the laboring classes. Flax is extensively grown, and the best of linen is made.

Ireland is a fine **stock** country. The cattle find pasture even in winter.

15. Cities.—**Dublin,** the capital and metropolis of Ireland, is a handsome, flourishing city, and manufactures chemicals and mineral waters. It is the seat of a celebrated university.

Belfast manufactures more linen goods than any other city in the world and has large shipbuilding industries.

Making linen in Belfast, Ireland. Flax is a fiber like cotton or wool, but is taken from the stalk of the plant. It was formerly cleaned by hand. Now this is done by a "hackling" machine, shown in cut 1. You can see the long row of flax fibers hanging across the front of the machine, where they are cleaned and combed smooth. They then pass to the machine shown in the second cut, where the fibers are drawn out and twisted into "cord." These cords, farther drawn out, are spun into thread, and woven into cloth by spinners and looms, very much like those used for cotton. (See page 54.) The third cut shows embroiderers at work.

Cork, on the river Lee, is the chief commercial city of southern Ireland.

At **Queenstown** the trans-Atlantic steamers take on and put off mail and passengers. It is the seaport of **Cork. Limerick, Waterford,** and **Londonderry** are other important Irish ports, having chiefly an import trade in breadstuffs.

16. The Isle of Man, lying in the Irish Sea, although a part of the British Empire is practically independent. It has a legislature of its own, but is under a governor appointed by the king of England. The people are called Manxmen.

17. Several picturesque islands, called the **Channel Islands,** lie across the English Channel very near to France, but belong to Great Britain. The largest of these are **Jersey, Guernsey,** and **Alderney.** They are noted for their fine breed of cattle. You have seen cows called Jerseys, Guernseys and Alderneys.

Review Topics.—Great Britain consists of what? Describe her foreign possessions. The people. The surface. The climate. What are the chief minerals? Agricultural products? Manufactures? Describe commerce. Her carrying trade. Her navy. The government. The religion. London. Liverpool. Glasgow. Edinburgh. Manchester. Birmingham. Leeds. Sheffield. Newcastle. Nottingham. Portsmouth and Chatham. Oxford and Cambridge. Inverness. Cardiff. Describe the surface of Ireland. Climate. Productions. Dublin. Belfast. The Isle of Man. The Channel Islands.

Kief, on the Dnieper, in the heart of the Black Lands. Notice the wharf boats which rise and fall with the river. Compare with Memphis.

commerce. It is celebrated for a vast structure called the Kremlin, which includes forts, barracks, palaces, churches, and cathedral all in a group.

Warsaw is the great railroad, manufacturing, and trade center for Russian Poland. It is at the head of steam navigation on the Vistula. **Lodz,** not far distant, is in the iron and coal region.

St. Petersburg, Moscow, Warsaw, Lodz, and **Narva** are the cotton manufacturing cities of the Empire.

A mountain farm in Norway. Notice the glacier on the right far up on the mountains.

Odessa, on the Black Sea, is the great grain market of Russia.

Cronstadt is the port of St. Petersburg, and the principal naval station of Russia. **Kief** is engaged in sugar refining and the manufacture of leather.

Riga is a great market for flax and linseed, lumber and hemp. **Saratov,** on the Volga, is an important grain and lumber market.

Archangel, in latitude 64½° north, is the shipping port of northern Russia. It has an export trade in grain and lumber through the Arctic Ocean.

Astrakhan is an island city on the Volga River. It is the center of the fisheries in the Caspian Sea and the Volga.

9. Sweden and Norway.—These two countries were united under one king in 1814, but became again separate kingdoms in 1905.

They occupy a mountainous peninsula, called **Scandinavia.**

The surface of Norway is rugged, and the rays of the sun strike feebly into its deep glens, so that the cultivation of the soil is not very remunerative. Sweden, however, raises large crops of grain, and affords pasture for millions of cattle and sheep.

In the northern part of Norway, during several weeks in summer, the sun does not set at all, and travelers often go to the North Cape to see the **midnight sun.**

10. The **chief industries** are connected with the **forests,** which are very extensive and furnish timber for the shipbuilding industries of the countries of northern Europe; with the **mines,** which supply the celebrated Swedish iron; and with the **sea-fisheries** of the Lofoden Isles, which furnish large supplies of fish for Europe.

The chief **exports** of Sweden are timber, wood pulp, iron, live-stock, butter, and matches; those of Norway are lumber, fish, and butter.

The United States buys iron, wood pulp, and fish of these countries, and sells them raw cotton, kerosene, flour, and farm tools.

The Swedes and Norwegians are Lutherans in **religion.** They belong, therefore, to Protestant Europe. **Education** has received great attention. Public instruction is free, excellent, and compulsory.

One of the fiords or bays which are very numerous along the coast of Norway. These are formed by the sinking of the coast, which allows the waters of the ocean to flow up the narrow valleys.

11. Cities.—**Stockholm,** the picturesque capital of Sweden, at the eastern extremity of Lake Malar, is the chief city. It is situated in the mining and agricultural region.

Gottenborg is the second city in size and the first in commerce.

Carlscrona is the naval arsenal of Sweden.

Christiania, the capital of Norway, has a large trade in lumber.

Bergen is chiefly engaged in the Lofoden fishery.

Hammerfest, the most northerly town of Europe, has a population of 1,500, who, even in the winter months, are busily engaged in fishing.

12. Lapland, a region of Sweden, Norway, and Russia, lying within the Arctic circle, is inhabited by the Lapps, of whom there are about 14,000 in Sweden and Norway.

Packing fish in Norway.
[Copyright, Am. Stereo. Co.]

The **reindeer** is the chief source of wealth, supplying the people with most of the articles of food and clothing that they use.

The Lapps, Finns, Eskimos, and tribes of northern Liberia, all belong to the same branch of the Mongolian race as the American Indians. They probably form the oldest branch of this race.

Review Topics.—Size and population of Russia. What three nations together control one-half of the earth? What part of the population? Describe surface of Russia. Rivers. Climate. Mineral resources. Manufactures. Black lands. Agriculture. Steppes. Pursuits. People. Government. St. Petersburg. Moscow. Warsaw. Odessa. Cronstadt. Kiel. Riga. Archangel. Astrakhan. What change has occurred recently in the government of Sweden and Norway? Describe their position. Surface. Chief industries. Exports. Religion. Education. Capital of each. Other cities. Hammerfest. Situation of Lapland. Its chief source of wealth.

LVIII. SPAIN, PORTUGAL, AND ITALY.

1. These countries lie mainly between the same parallels of latitude. They have similar climates and productions, and therefore similar pursuits.

2. Spain and Portugal.—Spain and Portugal occupy the Spanish Peninsula. This peninsula consists of a high central plateau, traversed by several parallel mountain chains.

As rain is shut out by high mountains along the coast, parts of the plateau are so dry that agriculture depends upon irrigation, which has been practiced for many centuries.

Some of the mountain peaks are high enough to be always covered with snow.

3. The Inhabitants have dark complexions, with black hair and eyes, quite different from the flaxen-haired, blue-eyed Germans of the north of Europe.

Like the Italians, and all other people who live in mild climates and under bright skies, they are lively and gay, inclined to outdoor amusements, fond of bright colors, and much given to music and dancing.

An orange grove near Valencia, Spain. The oranges are sold by weight. The buyer is standing by the scales.

4. The Government in both of these countries is monarchical. The Roman Catholic is the established religion.

5. Spain.—Spain is rich in minerals, especially in quicksilver, copper, iron, coal, lead, and salt.

The richest **quicksilver** mines in the world are at Almaden. Bilbao exports more **iron ore** than any other port on the mainland of Europe.

The principal **agricultural** products are grain, esparto, flax, olives, grapes, and other fruits.

The chief **exports** are ores and metals, wine, oranges, olive oil, cork, raisins, nuts, and grapes.

The United States buys a large amount of the cork, wine, and fruit, and sells to Spain a small amount of cotton, tobacco, lumber, and oil.

The **forests** yield large supplies of cork, the bark of the cork-oak.

This tree is peculiar to the Mediterranean countries.

6. Cities.—All the principal cities are connected by railroads. Many of these intersect at **Madrid,** which is the capital and largest city. It is celebrated for its palace, museums, and university. It is important only as a place of residence and as the seat of the court.

A grove of olive trees.

The river Tagus at Toledo. The old bridge was built by the Moors The barren soil shows the effect of the dry climate.
[Copyright by Am. Stereoscopic Co.]

Barcelona is the next in size and the chief commercial city.

Valencia is famous for its oranges. **Seville** manufactures cigars and is famous for its Moorish antiquities and collections of paintings.

Malaga exports grapes, raisins, and wines. **Palos** is celebrated as the place from which Columbus sailed to America on his first voyage of discovery.

In **Granada** is the great Moorish palace called the **Alhambra.** It is the finest specimen of Arabesque architecture in Europe.

7. Gibraltar is a celebrated fortress situated on a rocky promontory. It commands the passage between the Mediterranean and the Atlantic. It is a free port and belongs to England.

Cutting cork bark. This does not kill the tree, since new bark forms over the peeled places.

8. The Andorra Republic has an area of 175 square miles and a population of 6,000.

It received its independence as a gift from Charlemagne in return for the services which it rendered to his empire in repelling the Moors when they attempted to cross the Pyrenees.

9. Portugal.—Portugal occupies the western portion of the Peninsula, and its physical features are similar to those of Spain. So, also, are its products and commerce.

The olives when ripe are crushed in this mill. The oil is afterward pressed out of them.

It yields a larger supply of cork than any other country.

Lisbon is the capital and principal commercial city. It was the scene of a fearful earthquake in 1755.

Oporto is chiefly known for its port wine.

The **Colonial Possessions** of Spain are, mainly, the Canary Islands and certain islands and parts of the west African coast; of **Portugal,** the Azores, Madeira, Cape Verde Islands, and parts of Africa.

10. Italy.—Italy, the seat of the ancient Roman Empire, occupies a peninsula in Southern Europe which, except on the north, is surrounded by the Adriatic and Mediterranean seas.

It is famous for its bright skies and beautiful scenery, its fruits, its magnificent public buildings, picture galleries, and works of art.

Besides the peninsula, Italy comprises Sicily, Sardinia, and other less important islands.

Northern Italy consists chiefly of a vast plain; the rest of the peninsula is traversed throughout its length by the Apennines as a sort of a backbone. Its lakes are extremely picturesque.

Southern and insular Italy contains the celebrated **volcanoes** of Vesuvius, Etna, and Stromboli.

Italy is connected with Central Europe by fine roads through the mountain passes, and by railroads which go through **tunnels.** The most famous passes are the great St. Bernard, the St. Gothard, the Mt. Cenis, and the Simplon. Under the three latter are railroad tunnels. Without these roads Italy could not carry on its large trade with Northern Europe.

11. Productions and Pursuits.—Wheat, corn, rice, grapes, olives, oranges, lemons, and figs are extensively grown.

Lombardy, as the valley of the Po is often called, is well watered, and its meadows may be mowed six times in a year. It is famed for the produce of its dairies, and the extent of its rice fields and mulberry groves. The mulberry leaf is the food of the silkworm. Italy produces more raw silk than any other country in Europe. The yield is not far from ten million pounds per annum.

The sulphur of Sicily, the marble of Carrara, iron, and borax are the principal mineral productions.

The harbor of Genoa.

The chief occupation of the people is agriculture. northern Italy is also largely engaged in manufactures.

The fisheries, including those of sponges and coral, employ as many as 20,000 vessels and boats, and 64,000 men.

The principal exports are raw silks and velvets, olive oil, wine, and fruits, sulphur, marble, and macaroni. Leading imports are grain, raw cotton, coal, lumber, and wool.

Italy sells to the United States raw silk, fruits and nuts, sulphur and olive oil, and buys from us tobacco, lumber, and kerosene.

12. Government.—The government is a constitutional monarchy. The established religion is the Roman Catholic; others, however, are tolerated. Public education is compulsory.

13. Cities.—**Rome** is the capital of Italy, and the residence of the Pope, who is the head of the Roman Catholic Church.

Its ruins, its churches, its art galleries and museums, its traditions and associations, make it the most famous city in the world. It is continually crowded with students and tourists.

View on the river Tiber at Rome. St. Peter's in the distance.

A bird's-eye view of Venice, showing the Alps in the distance and the city built on the islands of the Adriatic. The Grand Canal passes through the city, and many other canals which serve for streets run in every direction.

Naples is the largest city of Italy. It is noted for its beautiful bay, and for its manufactures of silk.

Near it stood the cities of Herculaneum and Pompeii (see page 10).

Great quantities of coral are obtained in the sea near Naples, and are manufactured into jewelry in the city.

Venice occupies seventy-two small islands, connected by bridges. Canals take the place of streets. They are navigated in boats called gondolas.

Milan, the chief city of Lombardy, is the center of the silk trade, and noted for its manufactures and its beautiful cathedral built of white marble.

Making macaroni in the streets of Naples.

Turin is celebrated for its beautiful situation and appearance, its museum and cathedral, and its manufacture of cotton, linen, and silk.

Florence, one of the most beautiful and healthful cities of Italy, is rich in its works of art. Nearby is **Fiesole** (*fe-ay'so-lay*), where Galileo used his telescope. The great sculptor Michael Angelo lived here.

Palermo, the largest city on the island of Sicily, is a great fruit market.

Genoa, famous as the birthplace of Columbus, is the leading seaport of Italy. It manufactures the finest of silks and velvets.

14. San Marino is a picturesque little republic in Italy, on the spurs of the Apennine Mountains. It covers only about thirty-two square miles of land, and only about 8,000 people live there.

View of the Golden Horn and Constantinople.

Mosque of the Sultan Achmet at Constantinople.

great land route from Western Europe crosses to Asia. These great highways have made it for many centuries the center of trade for the Levant. It is called the "Key to the East."

This city was founded on the site of old Byzantium, by **Constantine** the Great, in the year 328. In 1453 it fell into the hands of the Turks.

It contains the seraglio (*se-ral'yo*) or residence of the Sultan, and the mosque of St. Sophia. This building (once a Christian church) contains some columns which originally stood in the temple of Diana at Ephesus.

The Golden Horn, an inlet of the Bosporus, is the harbor.

The chief manufactures are carpets, leather goods, and meerschaum pipes. (Meerschaum means *the foam of the sea.* It is really a kind of soft chalk.)

Adrianople is in a land of roses. It manufactures cotton and woolen goods, silk, and the perfume called "attar of roses."

Saloniki is beautiful in the distance, with its mosques, minarets, domes, and towers. It manufactures carpets, silk, and leather goods.

The celebrated **Mount Athos** stands on a peninsula to the east of Saloniki. It has been occupied for ages by a community of Greek monks.

View of the Balkan Mountains and the valley of the Drina on the border of Servia.

7. Roumania is an interesting little kingdom. Its industries are chiefly agricultural. The people, as the name implies, are descendants of ancient Roman colonists. Their language is largely Latin in origin.

Bukharest, the capital, exports grain, cattle, and wine. **Jassy** is an important center of trade.

8. Servia.—Servia is a kingdom of farmers. The poorest own land. No pauperism exists. The chief article of export is hogs. Immense numbers of them feed in the vast forests on the acorns which cover the ground. **Belgrade,** on the Danube, is the capital.

This city has been the scene of many stubborn battles between Christians and Mohammedans during the attempts of the latter to conquer Europe.

Montenegro, bordering on the Adriatic, is a little, independent monarchy.

The country is inhabited by a hardy race of mountaineers. They belong to the Greek church and obtained their independence of Turkey in 1697. They were protected by Russia until 1878, when they were acknowledged as independent.

Review Topics.—Where is Greece situated? Its natural divisions. Surface. Coast. Industries. Products. Exports. Greek merchants. The "Levant." Government. Brigandage. Athens. Corinth. Piræus. Where does the Turkish Empire lie? Climate. Surface. Natural resources. Government. Exports. Inhabitants. Religion. Government. The Principality of Bulgaria. Capital. Exports. Constantinople. What is the effect of the geographical position of this city? Buildings of interest. Manufactures. Describe Adrianople. Saloniki. Mount Athos. Of Roumania. Servia. Exports. Montenegro.

France.—Bound France. What great mountain range separates France and Italy? France and Switzerland? France and Spain? Where is the Puy de Dome? What river enters the Gulf of the Lion? Between what mountain ranges does it flow? Into what does the Seine flow? What two large rivers flow into the Bay of Biscay? Where is the island of Corsica? What is the capital? What seaport at the mouth of the Seine? On the Mediterranean? Where is Lyons? Brest? Rouen?

German Empire.—What countries on the south? West? East? Country and seas north? Mountain range between Bohemia and Bavaria? Between Bohemia and Saxony? Between Silesia and Bohemia? Where is Prussia? Bavaria? Würtemberg? Saxony? Baden? Alsace? Hesse? What rivers flow into the North Sea? Into the Baltic? What large river crosses Bavaria? Where is the Isar? The Hartz Mountains? What is the capital? Where is Hamburg? Bremen? Lübeck? Dresden? Munich? Leipsic? Nuremberg? Strassburg? Mainz? Cologne? Breslau? Dantzic? Frankfort? Wiesbaden? Stettin? Königsberg? Heidelberg?

Netherlands.—What sea on the north and west? What Empire on the east? Country on the south? Large river flows through the Netherlands? Sea indents the coast? Islands skirt the coast? What is the capital? Where is Rotterdam? Amsterdam?

Belgium.—What countries nearly surround Belgium? What sea on the northwest? What is the capital? On what river? On what river is Ghent? Where is Antwerp? Liège? Namur?

Denmark.—What sea on the west? What bodies of water on the north and east? What portion of Germany on the south? Name the peninsula and two largest islands of Denmark. What is the capital?

Austria-Hungary.—What countries on the west? North? East? South? What sea forms part of the southern boundary? What mountains in the northeast? Near the Adriatic coast? Where is Hungary? Bohemia? What great river traverses this country? What is the Save? Drave? Theiss? Moldau? The Platten See? What is the capital? Where is Budapest? Prague? Brünn? Gratz? Tokay? What is the great seaport?

Switzerland.—What country on the south? East? North? West? What mountains separate Switzerland from Italy? From France? What lake in the northeast? Southwest? What river rises on the northern slope of the Alps and enters the Gulf of the Lion? What river, rising not far from the source of the Rhone, flows into the North Sea? What is the capital? Where is Geneva? Zurich? Basel? Lausanne?

LX. FRANCE.

1. France is only a little larger than Georgia, Alabama, Mississippi and Tennessee together, but its population is about half that of the United States.

The Great Plain extends across northern and western France to the Bay of Biscay, broken by highlands in Normandy and Brittany. Southeast of this is the Central Plateau, and beyond the mountain region of Southern Europe. Ranges of the Alps, including Mt. Blanc, the highest peak, are in France.

The **Rhone,** the **Seine,** the **Loire,** and **Garonne** are the principal rivers. With the **canals** connecting them they form the chief means of transportation.

2. Climate.—The latitude of France corresponds nearly to that of Maine, but its climate is far milder. The winds from the Atlantic and the Mediterranean modify the temperature.

3. Productions.—In Southern France the vine, the olive, the orange, the pomegranate, the fig, and the silkworm all thrive. Sheep are raised in large numbers.

Wine making in France. A vineyard in Champagne, near Rheims, showing how the grapes are gathered. Above, the grapes are being brought to the wine presses, and below is a cellar showing the large vats and casks in which the wine is stored.

Central France is the wine and maize region.

The districts of Champagne and Burgundy, and the valleys of the Garonne and Dordogne, constitute the greatest **wine-producing** region in the world.

In **Northern** France the chief products are grain, orchard fruits, and root crops.

The **beet** root is extensively cultivated for making sugar.

France grows more than 300 million bushels of wheat a year, yet she must import a considerable amount. In the northwestern part

In the mountains of southern France, showing a graded public road.

dairying forms an important occupation, and cheese and butter are exported. Near the Belgium border and in the eastern mountains **coal** and **iron** are extensively mined. Near by are great manufacturing cities.

On the plain, southwest France, showing the river Garonne, a railroad, and a canal which is carried across both by an aqueduct bridge.

4. Occupations.—The people are unsurpassed for thrift and industry. They are largely engaged in agriculture, manufacturing, mining, and fishing.

Silk culture is extensively carried on. The value of the cocoons annually produced is about $15,000,000.

France has a high rank in **manufactures,** and excels in silks, velvets, and woolens, perfumes, jewelry, ladies' dresses, and millinery.

The French artisans surpass all others in the designing of patterns, and in the arrangement of colors.

The **sardine** fisheries of the Mediterranean and west coasts, the oyster fisheries, and the cod fisheries of the Atlantic and the Banks of Newfoundland are very important.

In foreign and domestic commerce France is one of the leading countries of Europe. She imports from the United States, cotton, petroleum, meat, and grain in

enormous quantities. France buys more goods from the United States than from any other country except Great Britain, and sells to us an amount of her manufactures about equal in value to her imports from this country.

More than 100 canals unite the various rivers. Railways extend from Paris to all parts of France and the continent. Steamers sail to all the principal ports of the world.

Silks, woolen and cotton goods, wines, jewelry, millinery, gloves, and ladies' clothing are the chief exports.

5. Government and Religion.—France is a Republic. The people enjoy religious freedom. The majority are Roman Catholics. Public education is free and compulsory.

The French are descendants of the Celts and of the Franks, a German tribe who conquered them.

In Brittany are found the Bretons, who are of the Celtic race.

6. Cities.—**Paris** is the most splendid city and one of the most influential capitals in the world. The French language is the one in which the diplomats of Europe generally hold intercourse.

LXI. THE GERMAN EMPIRE.

The German plateau.—The valley of the river Stein at Munster.

1. The German Empire is a **confederation** including the four kingdoms of Prussia, Saxony, Bavaria, and Würtemberg, together with six Grand Duchies, five Duchies, seven Principalities, three Free Cities, and one Imperial Province. Prussia is the largest and most populous of the German States.

2. Area.—The German Empire is a little larger than France, but it is much more densely peopled. Saxony is the most densely populated country in the world.

3. Surface.—North Germany and all east Germany occupy a portion of the great plain of Europe. South of this plain is the central plateau, which, in the western half of the empire, extends to the Alps. It is a part of the same worn-down mountain region that borders the plain in France, and extends eastward through Austria. Rivers have cut deep valleys in this plateau, and low mountain ranges rise above it.

2. The clay pieces are placed in ovens where the great heat changes the clay into china.

Making Dresden china at Meissen.
1. Molding dishes from clay.

The **Rhine** is the most noted of these rivers. It is famous for its romantic scenery. **Canals** connect it with the Danube, the Seine, and the Rhone. The Elbe, Weser, the Odor and Vistula are all navigable and are connected by canals.

4. Products.—Coal, iron, zinc, silver, lead, copper, and salt are found throughout the plateau region, and this explains why the Germans have named the mountains of Saxony the Ertzgebirge, or "ore mountains."

In the northern part of the plain **amber** is mined, but it is not a mineral. It is the resin of a kind of pine tree buried ages ago and thus hardened. It is washed up along the shores of the Baltic. In ancient times amber was highly prized. It is now used in making beads, jewelry, and mouthpieces for pipes.

Mineral springs also abound. Baden-Baden, Aix-la-Chapelle, and Wiesbaden are famous watering places.

The **agricultural products** are varied. The grains and sugar-beet are raised in great abundance; flax grows in all parts of the empire; tobacco and grapes flourish in the warm river valleys.

Forests cover one-fourth of the country. They are under government care.

The mountains of Germany are covered with forests, and this is shown by the names which the Germans have often given their mountains. The Black Forest (German, *Schwartzwald*), east of the Rhine, which is so famous in German stories, is the name of a mountain region nearly 5,000 feet high.

The manufactured products include all articles that a country needs, and Germany ranks third among manufacturing nations.

The woolens of Saxony, the Rhine wines of Prussia, the china of Dresden, the dolls of Sonneberg, the toys of Nuremberg, and the Krupp guns and steel armor of Essen are famous all over the world.

More than twice as much sugar is manufactured from beets in Germany as is made from cane in Cuba, and in this industry she ranks first among the nations.

5. Occupations.—Eight millions of the population are engaged in tilling the soil. Manufacturing, wool-growing, and mining are also leading pursuits.

To promote trade, great commercial **fairs** are held. Those of Leipsic are the most famous.

3. The china is next painted and decorated, and again placed in the oven and heated until the coating which has been placed on it becomes enamel.

Trade.—Germany has a large and rapidly growing commerce with all parts of the world. In value this trade is next to that of the United Kingdom. Her great exports are iron and steel goods, cottons, woolens, and silks, beet sugar, machinery, clothing, hides, leather, and chemicals. Her imports are mainly raw materials and food products. Find out from statistical tables IV and V about the trade she has with the United States.

Transportation.—Steamship lines connect the ports of Germany with all parts of the world, and railroads connect all the important cities with one another and with the leading cities of Europe.

6. Government.—The general government of Germany is a limited monarchy. Each State regulates its own local affairs.

Representatives are sent from each State to the **Bundesrath,** and to the **Reichstag,** which are the Upper and Lower Houses of the German Parliament. The king of Prussia is also the emperor of Germany.

History.—The present German Empire was established in 1871 through the influence of Prince Bismarck, and William, king of Prussia, was the first emperor.

Making beet sugar. The beets are sliced and placed in the iron [illegible]. These are connected and warm water is forced through them. The water dissolves the sugar out of the beets and comes out as a syrup which is made into sugar in the same way as cane juice. Such an arrangement of tubs for extracting the juice is called a diffusion battery.

The German people are descendants of Caucasian tribes that are thought to have come

from Asia and settled around the Baltic Sea and in the Scandinavian peninsula. They resisted the Roman Empire, and after its fall different tribes of the race conquered Italy, Spain, France, and England, all of which had been parts of the Roman Empire. Karl the Great, whom the

An ocean steamship in dry dock at the Vulcan yards, Stettin.

French called Charlemagne, established an empire which fell to pieces after his death. It was re-establised a hundred years later and lasted until it was broken up by Napoleon. It was a loose confederation of states and never closely united like the German Empire of to-day.

7. The People.—The Germans are thrifty, ingenious, and intelligent. We are indebted to them for many great inventions, and for scholarly works on the ancient languages, on chemistry, and philosophy. They are noted for their love of music, and some of the greatest composers have been Germans.

The Schools and the Army.—Germany owes her high rank and her influence among the nations to her public schools and her army. Every child must go to school and every man must serve in the army. This system was adopted many years ago, and to-day the German public schools and the universities are famous, and the army of the empire is one of the best in the world.

An old town in Germany. Notice the gate with watch tower and bell.

8. The Free Cities, Hamburg, Bremen, and Lübeck, are republics, although a part of the empire. They are extensively engaged in commerce. Hamburg, on the Elbe, is the chief seaport of Germany, and the first commercial city on the continent. It has steamship lines to every part of the world.

Hamburg's population has more than doubled in the last few years; its growth is due to the development of the manufactures and industrial interest of Germany. Bremen, on the Weser, ranks second as a seaport. Its harbor is Bremerhaven.

9. Cities.—**Berlin,** the capital of the empire and of the kingdom of Prussia, is one of the largest and finest cities of Europe. It is celebrated for its university and public buildings.

Hamburg, Germany.

"Unter den Linden," a street in Berlin.

Dresden, the capital of Saxony, is famous for its art gallery and libraries and its pottery.

The Dresden china is made at **Meissen. Chemnitz,** nearby, manufactures cotton and woolens, hoisery and knit goods.

Munich, the capital of Bavaria, is renowned for its literary institutions and galleries of art. **Nuremberg** is the market for hops and toys.

Breslau is the great wool and linen market of the empire, and the center of an extensive trade.

Leipsic and **Stuttgart,** the capital of Wurtemburg, are famed for their printing establishments, and Leipsic for the number and cheapness of its publications and for its great university.

Cologne, famous for its cathedral, and its wine and perfumery, is the most populous city of Prussia on the Rhine. **Ehrenbreitstein** is one of the strongest Prussian citadels.

From **Königsberg** and **Dantzic** large quantities of Russian grain are shipped. **Stettin** is an important seaport, and has the largest shipyards in Germany.

Frankfort-on-the-Main is a great financial center, and depot of inland trade. **Strassburg** is celebrated for its trade, its fortress, and its cathedral, which contains a wonderful clock. Most of our dolls come from **Sonneberg.**

The **colonial possessions** of Germany comprise certain portions of the eastern and western coasts of Africa, a part of New Guinea called Kaiser Wilhelm's Land, the Bismarck Archipelago, the Marshall and the Caroline Islands, and part of the Solomon and part of the Ladrone Islands in Oceania.

Public square in the old city of Nuremberg.

Review Topics.—What does the German Empire include? Surface of Germany. Mineral resources. Agricultural. Manufactures. Occupations. Government. Who is emperor of Germany? The people. Schools. Name the free cities. Describe Hamburg. What of Berlin? Dresden? Münich? Breslau? Leipsic? Cologne? Ehrenbreitstein? Königsberg and Dantzic? Stettin? Frankfort? Strassburg? Colonial possessions?

LXII. NETHERLANDS, BELGIUM, AND DENMARK.

Delft, showing the sea wall, the canal, and the water beyond. The buildings are oil refineries.

1. The Netherlands.—The Netherlands, also called Holland, is a low and flat country intersected with canals which drain the land and serve as roads. One-third of it has literally been reclaimed from the sea, the waters of which are being kept out by means of an embankment like the levees on the Mississippi river.

The people themselves call their country "Nederlanden," which means low countries. We call it "Holland;" but they apply this name only to those parts below the sea level, the word Holland in their language meaning hollow country.

The country lies in the delta of the Rhine, and the higher parts were built up by deposits from that river, which here enters the sea through several different channels. These are connected with the canals so that one can go by boats all over Holland. Railroads have been built, but the canals are still used by the people in going to and from market.

2. Pressing the cheese.

Cheese making in Holland. 1. The interior of a dairy.

The Dutch are a sober, provident, and thrifty people. The chief industries are agriculture, commerce, and manufactures.

The country is a sort of dairy farm, from which England obtains supplies of meat, butter, and cheese. It is also famed for its linen.

The Dutch are fine sailors, and are extensively engaged in sea fisheries and commerce.

The herring and oyster fisheries in the North Sea are a source of great wealth. The Dutch herrings are known all over the world.

The government is a constitutional monarchy. The States-General is the legislative body. It corresponds to our Congress. The people are mostly Protestants, but all religions are tolerated, and Protestants, Roman Catholics, and Jews alike receive aid from the public funds.

2. Cities.—The Hague is the seat of government. It is famed for its museum.

Amsterdam, on the Zuider Zee, is the largest and most important city. Its diamond polishers are the most celebrated in the world.

Rotterdam is next to Amsterdam in size. It is the chief port of the country and is one of the important seaports of the world. A ship canal connects it with the sea. **Utrecht, Haarlem, and Leyden** are important towns. **Edam** and **Alkmaar** are noted for their cheese.

Delft manufactures fine pottery, and is a great cheese and butter market.

Holland has no coal, iron, or other metals. What effect does this have on her industries? Building materials and timber are also lacking. Brick, tile, and earthenware are made in abundance. Butter, cheese, meat, and oleomargarine are leading exports. Besides jewelry and diamonds, we buy from Holland tobacco, tin, fish, hides, and cheese. She obtains the tobacco and tin from her colonial possessions. We sell to her flour, cotton, meats, and naval stores.

3. The cheese market at Alkmaar.

The **colonial possessions** of the Netherlands contain a population numbering about 30,000,000 people, or more than seven times as large as that of the mother country. They embrace many of the most important of the **East India Islands,** several of the **West Indies,** and **Dutch Guiana.** The most valuable of all is **Java,** so famed for its coffee. The little islands of **Banca** and **Billiton,** in the East Indies, supply most of the best tin in the world.

3. Luxemburg was once a part of the Netherlands, but it is now independent, by agreement between the powers of Europe. It is governed by a grand duke, though it belongs to the German Zollverein, or Customs Union. The people generally speak German. It is on the plateau which is rich in iron ore, and mining is an important industry. Agriculture is the occupation of most of the people. The city of Luxemburg is the capital.

Rotterdam, showing a canal lined with boats that bring produce to market.

4. Belgium is a well cultivated and densely settled country. It has 588 inhabitants to the square mile; England has 436;

Stacks of flax along the river Lys, and men engaged in rotting, or soaking, it to loosen the fiber from the woody part. The water of the Lys is exactly suited to this work, which is a leading industry of this part of Belgium. [Copyright by Underwood & Underwood.]

Shantung (China), over 683; and Saxony, 743 to the square mile.

The northern section lies in the Great Plain. The southern part lies in the Central Plateau, which is rich in minerals.

The country is rich in soil, forests, and minerals, and is noted for the extent and variety of its manufactures. It is one of Europe's greatest coal and iron producers.

Belgium manufactures more goods in proportion to its population than any other country. Its leading manufactures are woolen goods, linens, and laces. In the coal region iron and steel manufactures are leading products. The linen industry is carried on along the river Lys, and Brussels and Mechlin laces are sold everywhere. Brussels carpets were first made here.

Manufacturing firearms in Liège. 1. Polishing gun stocks.

2. Making gun barrels. A solid bar of metal is heated and hammered until it is tempered and in shape. It is afterward bored out. This is a steam trip hammer used to forge the metal.

The **government** is a constitutional monarchy. The majority of the people are Roman Catholics. Full religious liberty is granted to all.

Trade.—Belgium has an enormous foreign commerce for so small a country. Her exports are coal and coke, textiles of every sort, beet sugar, glass, machinery, diamonds, and a large variety of manufactures. She imports raw materials and foods, lumber, metals, kerosene, and coffee.

She buys our food products, naval stores, raw cotton and petroleum. She sells us linens, laces, dress trimming, diamonds, and fine gun barrels.

5. Cities.—**Brussels,** the capital, on the Senne, is for its beauty a second Paris. It is widely known for its lace. Near Brussels is the field of Waterloo, where Napoleon was defeated. **Antwerp** is one of the chief commercial ports of Europe.

Ghent is extensively engaged in the manufacture of cotton goods. **Liège,** near the coal fields, leads the world in the making of firearms.

Ostend, an important seaport on the North Sea, is the headquarters of the Belgian cod and herring fisheries. **Bruges** is famous for its linens and lace. This town derives its name from its *bridges*, of which there are fifty-four.

6. Denmark.—Denmark consists of the low peninsula of Jutland, together with several islands near the entrance of the Baltic Sea.

The coasts are low and shelving. The western shore of Jutland is so dangerous that it is called by sailors the "iron coast." The eastern coast is less inhospitable, and has several excellent harbors. There are numerous bays or fiords which reach far into the land.

The "Sound," a strait only three miles wide, separates Denmark from Sweden. It is the natural highway for vessels bound to the Baltic. Many buoys and lighthouses, maintained by the Danish Government, are required to render its navigation safe. The Kaiser Wilhelm Canal, which connects the Baltic and the North Sea, now enables vessels to avoid the passage of the Sound.

7. The **peninsular** form of Denmark renders the climate moist, even, and mild. The inhabitants are chiefly devoted to agriculture, stock-raising, fishing, and shipbuilding.

Productions and Trade.—Denmark produces and exports butter, and cheese, mainly milk, Beef, cattle, horses, wool, and eggs, also, are sold. Our imports from Denmark consist chiefly of hides, wool, and rennet, a substance used in cheese making. We sell to Denmark oil-cake, grain, flour, cotton, and kerosene. Flour, beet sugar, and liquors are made, and Copenhagen builds ships out of Norway lumber. The most careful attention is given to butter making. There are over one thousand steam factories, where it is packed and salted to meet the demands of all markets. Enormous quantities are exported.

3. Charging the metal cartridges. The machine puts in the cap, measures the powder, and fastens the ball in the shell.

The **government** is a limited monarchy; the religion of the people is Lutheran; education is nearly universal.

Copenhagen, on the island of Zealand, is the capital, and the only large town in the kingdom.

The **colonial possessions** of Denmark are Iceland, Greenland, several of the West Indies, and the Faroe Islands.

The **Faroe Islands** (population 10,000) are volcanic in origin. Sheep farming is profitable, and barley is raised. Many of the islanders live by climbing the dangerous cliffs for the eggs and feathers of sea-birds.

The market place at Copenhagen.

Review Topics.—Describe the Netherlands. Describe the Dutch. Their industries. Navy. Government. Religion. The Hague. Amsterdam. Rotterdam. Colonial possessions. Luxemburg. Describe Belgium. Its resources and manufactures. Government. Religion. Brussels. Waterloo. Antwerp. Ghent. Liège. Ostend. Bruges. Of what does Denmark consist? Its coasts. Climate. Industries. Exports. Government. Describe Copenhagen. Colonial possessions. Faroe Islands.

LXIII. AUSTRIA AND SWITZERLAND.

Innsbruck.—The Alps in the background.

1. Austria-Hungary.—The Austro-Hungarian Monarchy consists of the Empire of Austria and the Kingdom of Hungary.

Government.—Each country has its own officers, constitution, its own parliament, and executive. But the Emperor of Austria is also the King of Hungary. One set of ministers to foreign lands represents both countries, the army and navy belong to both, and some laws for the common good are made by the two parliaments acting together.

Austria is in the mountain region of Europe, and three-fourths of the empire is mountain ranges or plateaus. Hungary consists of a great, almost treeless plain, very fertile, and enclosed by mountains. Bohemia is a high plateau enclosed by four ranges of mountains.

2. The ends of the cylinder are cracked off, and it is cut open with a diamond from end to end. It is then placed in a furnace on a flat surface and the heat causes it to open and flatten out, forming a pane of glass.

Glass making, a famous Bohemian industry. 1. The sand and other materials are melted in a furnace. The workman then gathers a ball of glass on the end of a tube and blows it into a globe, as shown in the cut. Another workman attaches an iron rod to the other end of the globe, and they draw it and roll it into a cylinder.

2. Productions and Pursuits.—Austria is rich in minerals, especially in iron and **quicksilver** mine to that of Almaden the richest in Europe. The mineral waters of Carlsbad, Teplitz, and Marienbad are famous.

salt. The of Idria, next in Spain, is rope. The

Agriculture is the chief industry. The leading productions are grain, wine, tobacco, the sugar-beet, and flax.

The flour and wines of Hungary are among the most noted in Europe.

The western provinces are largely engaged in **manufacturing.**

Bohemia is famed for its colored glassware. Its factories of linens and damask are also celebrated; much beet-sugar is manufactured.

The principal exports are sugar, grain, wool, flour, eggs, timber, cattle, coal, leather goods, glass, and wine.

Her trade is almost entirely with northern Europe. She sells half her food exports to Germany, and buys one-third of her imports there. The leading imports are cotton, coal, silk, wool, copper, and machinery. She sells to us flax, beet-sugar, glassware, beer, and hides, and buys raw cotton, copper, kerosene, and machinery. She has considerable trade with Eastern countries, supplying the leading imports of Roumania, Bulgaria, and Servia, and handling their exports.

The **Danube,** with its tributaries, extending from one end of the empire to the other, furnishes facilities for a large *inland* trade, while, with the Black Sea, it forms a continuous water-route for *f* commerce. It presents the grandest river scenery in Europe.

3. Cities.—Vienna, on the Danube, is the capital of Au and the chief seat of its manufacturing industries. It is a railroad center, and has a large trade down the Danube. It focus of the inland trade of the country, as **Trieste** is of th eign trade. It is noted for its public buildings and librari

The workshops of Vienna send forth large quantities of hard porcelain, silks, jewelry, gold and silver embroidery, and m instruments.

Prague, formerly the capital of Bohemia, contains one o oldest universities in Europe.

It is the commercial center of Bohemia, and the second city of Au It was the birthplace of John Huss and Kepler. The church in Huss preached is still standing.

Grätz is in the iron region of Styria, and is the great center of th trade. **Brünn** is noted for its woolen, silk, and linen manufac

Pest, on Danube, and called *Ofen*, hot springs), one side of **Buda** (some the *oven*, fro on the other, connected magnificent pension br They form **B Pest,** the ca and chief mercial city Hungary. the Hunga

3. Glass vessels are pressed into shape and then cut on a revolving stone, as shown in the picture.

Parliament holds its meetings.

Four large fairs are held here every year. The celeb crown of St. Stephen, the first King of Hungary, was given to him by the Pope in the year 1000, is here.

Szegedin is an important grain and wine ma of Hungary. **Lemberg** is noted for its fairs.

Wieliczka is famous for its salt mine, which has been worke 600 years. It yields annually 100,000,000 pounds of salt.

Berchtesgaden is noted for its salt mine containing a beautiful

Franzen's Ring, [illegible] street in Europe.

4. Switzerland.—The Republic of Switzerland consists separate "Cantons," or States, which are as distinct from other as the States of our Union. The general affairs of th public are managed by a Congress somewhat like our own.

ASIA.

LXIV. PHYSICAL FEATURES.

1. We now pass from the States of Europe to the **oldest** nations and the **largest** continent on the globe.

Asia is larger than the two Americas together.

It contains the highest mountains and plateaus in the world, the largest population, and the greatest variety of race, language, and religion. Its coast line is marked by many indentations.

2. Surface.—The continent may be divided into three sections: the **Great Northern Plain**; the **Central Region** of desert plateaus and mountains; and the **Peninsulas** of the south.

The **Great Northern Plain** extends from the Altai Mountains and the Caspian Sea to the Arctic Ocean. Its extreme northern portion, bordering on the Frozen Ocean, consists of low marshes called Tundras.

The **tundras** are dreary and desolate. Their scanty population is composed of the nomad tribes called Samoiedes, who live mainly on fish and the flesh of the reindeer.

South of this belt is a vast forest region, extending from the Gulf of Finland to the Pacific shores of Asia, a distance of 4,000 miles. It is the abode of numerous fur-bearing animals.

In the west, between this wooded region and the mountains, are the **steppes**, or rolling prairies, which are gay with flowers in the spring, and green with grass in the summer.

On the Great Northern Plain of Asia.—A small town in Siberia.

They are the home of the roving Kirghiz (*-gēz*) and Tatars (*tah'-*), who here find pasturage for their herds.

These tents are their only homes, which they move from place to place when necessary to find better pasturage.

View of the Kirghiz steppes.

The **Central Region** of desert plateaus and mountains extends from the Red Sea nearly to the Pacific Ocean. It may be divided into two portions, an eastern and a western.

The **Eastern** portion embraces Tibet (the loftiest plateau on the globe), with the desert plateaus of Turkestan and Mongolia,

View of the plateau of Anatolia and the Bosporus, from the shore of Europe, near Constantinople.

MAP STUDIES.—What oceans on the north, south, and east of Asia? What seas on the eastern coast? What islands enclose Bering Sea? Okhotsk Sea? Sea of Japan? East China Sea? South China Sea? What great bay and sea on the south? Seas on the west and northwest? How are Asia and Africa united? What two mountain ranges partly separate Europe and Asia? What two peninsulas project from the south of Asia? What peninsula between the Persian Gulf and the Red Sea? What peninsula between Bering and Okhotsk Seas?

Surface.—Is Asia in general highland or lowland? Where is the greater part of the lowland? What is it called? What are the steppes? The tundras? Where are they? What plain east of the Caspian Sea? Northwest of the Persian Gulf? South and southwest of the Himalaya Mountains? What plain west of the Yellow Sea?

What great region stretches across the continent from the Red Sea to the Pacific? What plateau between the Red Sea and the Persian Gulf? South of the Caspian? What mountain ranges form the eastern boundary of this plateau? What plateau north of the Himalaya Mountains? What one north of Tibet? What plateau east of the plateau of Turkestan? What desert occupies a large part of this plateau? What plateaus occupy the two southern peninsulas?

In what direction do the Asiatic mountains generally lie? What great mountain range north of the plain of the Ganges? Between what two plateaus are the Kuen Lun Mountains? What mountains bound the plateau of Turkestan on the north?

What two mountain ranges separate the plain of Turkestan from the plateau of Iran? What range north of the plateau of Mongolia? What range bounds the desert of Gobi on the east? Where are the Nanling and Peling Mountains? What mountains border the plateau of the Dekkan on the east and west? What plateau between the Mediterranean and the Black Sea? What range of mountains between the Caspian and the Black Seas? What peak west of the Caspian?

Rivers and Lakes.—What are the three great rivers of the Northern Plain? Into what ocean do they flow? In what lake does the Yenisei rise?

What are the three great rivers on the eastern slope of Asia? Where is the Mekong? The Irawadi? The Brahmaputra? The Ganges? The Menam? How many rivers unite to form the Indus?

What two rivers unite and flow into the Persian Gulf? Where is the Caspian Sea? The Aral Sea?

Minerals.—What minerals are found among the Altai Mountains? Among the Ural? What in the plateau of Turkestan? North of the Hindu Kush Mountains? On the shores of the Caspian Sea? In the Dekkan? Between the Nanling and Peling Mountains? In Indo-China? The Japan Islands?

Vegetation and Animals.—What grow on the low Arctic shores? What are the products of the plain of Turkestan? Plateau of Iran? Arabia? Asia Minor? The district east of the Khingan Mountains? Plain of China? Uplands south of the Yangtze River? Plateau of Indo-China? Malay Peninsula? Dekkan? Plains of the Indus and Ganges?

What animals in the Great Northern Plain? Plateau of Mongolia? Tibet? Iran? Arabia? Where are the polar bear and seal found? Fur-bearing animals? What animals are found in the desert regions? Where is the elephant found? The crocodile? The tiger? The rhinoceros? What domestic animals are found in China?

ASIA
PHYSICAL MAP

SCALE OF MILES
0 500 1000

IOWA 55045 Sq.M.

Plains ___ *Green* *Low Plateaus* ___ *Buff*
Low lands ___ *Dark-green* *High* " ___ *Dark buff*

Longitude East from Washington

Longitude West

and a region of less elevation lying to the eastward and sloping gradually to the sea.

This region is **bordered** by the Altai Mountains on the north, and the Himalayas on the south, and is traversed east and west by lofty mountain chains.

The **Himalayas** (*abode of snow*) are the highest mountains in the world.

Along their entire length of 1,500 miles they rise far above the line of perpetual snow. Among their many lofty peaks stands the majestic Mount Everest, more than 29,000 feet high.

On the summits of the Himalayas, the highest mountains in the world. These are young mountains, and are always covered with snow. Notice that scattered through the glacier are boulders of rock which have been broken off, and will be carried down to the valley below.

These mountains present every possible feature of mountain **grandeur:** peak and precipice, gorge and glacier, rugged ravine and headlong waterfall. They are grander than the Alps, but not so beautiful.

View on the lofty plateau of Tibet.

The **western** portion comprises mainly the desert plateaus of Arabia and Iran, which are separated from the great northern plain by the Hindu Kush and Elburz Mountains.

The **Peninsulas** of Asia have a varied surface of tablelands and low mountains, well-watered valleys and river plains.

They are a region of great interest in the history of the world. From Arabia, Mohammedan civilization took its origin; and the Sanskrit, or sacred tongue of India, is the oldest language of the white race.

India and Indo-China are, with China and Japan, among the most densely populated portions of the world.

3. Rivers and Lakes.—The rivers of Asia are numerous and important.

The most noteworthy are the **Hoang, Yangtze,** and **Amur,** which flow down the eastern slope of the continent and enter the Pacific, and the **Ganges** and **Indus,** the **Mekong, Irrawadi,** and **Brahmaputra,** which descend the southern slope and flow into the Indian Ocean.

These rivers have built up the rich flood plains of China, Indo-China, and India, and furnish **water routes** for a vast internal commerce. The Hoang River or Yellow River has built up its flood plain with deposits of rich earth called "Loes," much like the bluff formation of the Mississippi. The Hoang winds about in its flood plains and frequently cuts a new channel for itself to the sea.

On the Mekong river in flood time.

MAP STUDIES.—What empire occupies a large part of Eastern and Central Asia? What country occupies most of Northern Asia? The southeastern peninsula? What three countries border on the Persian Gulf? What two to the east of Persia? What empire off the eastern coast?

Chinese Empire.—What mountains and river on the north? What mountains on the west? The south? In what portion of the empire is China? Tibet? Turkestan? Mongolia? Manchuria? What are the principal mountain ranges in China? Large rivers? Where is Hongkong? What city north of Hongkong? At the mouth of the Yangtze river? What triple city on this river? What is the capital of the empire? On what river? What is the capital of Tibet? The chief towns in Turkestan? Chief place in Mongolia? Capital of Manchuria? Where is Korea? Its capital.

Japan.—What are the principal islands occupied by the Empire of Japan? Which is the largest? What sea and strait separate Japan from the mainland? What is the capital? What city south of Tokyo? Where is Port Arthur?

Indo-China.—What countries occupy the region? What is Siam? What European power owns Burma? Where is Cape Romania? Capital of Siam? Capital of French Indo-China?

British India.—What great mountain ranges form part of its boundary? What sea on the west? Bay on the east? What are the principal rivers of India? Where is Cape Comorin? Where is Nepal? Bhutan? Kashmir? Name the capital of India. Where is Madras? Bombay? Benares? Delhi? Surat? Where is Ceylon? What is the capital?

Afghanistan and Baluchistan.—What mountains border these countries on the east? What traverse the northern part of Afghanistan? What sea on the south? What are the capital and chief towns of Afghanistan? What is the capital of Baluchistan?

Persia.—What sea on the north? What gulfs and strait on the south? What mountains in the northern part? In the southwestern? What is the capital? Where is Ispahan? Meshed? Tabriz? What port on the Persian Gulf?

Arabia.—Notice the form of Arabia? What waters nearly surround it? What country incloses the northern portion? What state occupies the southeastern coast? What is its capital? Where is Hayel? Riad? Aden?

Turkey.—On what seas and gulf does Turkey border? What two provinces in the Arabian peninsula belong to Turkey? What noted mountain at the head of the Red Sea? What strait at the entrance of the Red Sea? Is the capital of Turkey in Asia? What is it? Where is Smyrna? What city on the Tigris? On the Mediterranean? Where is Damascus? Jerusalem? Medina? Mecca? Mocha? What comes from this port?

Asiatic Russia.—What are the two great divisions of Asiatic Russia east of the Caspian Sea? What one west? Where is Lake Balkash? Lake Baikal? Sea of Aral? Into what does the Ural flow? The Amur? The Sir Daria? Where is Tobolsk? Khiva? Kokan? Bokhara? Irkutsk? Tiflis? Omsk? Tiumen? Barnaul? Kiakhta? Where is Nova Zembla? What sea south of it? Where are the New Siberia Islands?

View on the sacred river Ganges at Benares, showing bridge of boats in the distance.

The principal rivers of western Asia are the **Euphrates** and **Tigris,** which enter the Persian Gulf.

The **Ob, Yenesei,** and **Lena** are the chief rivers of the Northern Plain. They are frozen over for six months of the year; but during summer they are the waterways for local commerce.

The Yenesei, Ob, and Yangtze are each more than 3,000 miles in length.

One of the outlets of the Yangtze at Shanghai. Notice the landing and native boats in the foreground. A British gunboat and one of ours are in mid stream.

Several of the rivers, like the Amazon, are subject to **bores.** Those of the Indus, the Hoogly, and the Brahmaputra are remarkable.

The plateaus and plains of Asia abound with **salt lakes.** The Caspian and Aral Seas are the largest of these.

The **Caspian** is the largest lake in the world. It is more than four times the size of Lake Superior.

The **Dead Sea,** whose surface is more than 1,300 feet below the level of the Mediterranean, is the lowest of these salt lakes.

Of the **fresh-water** lakes the largest is Lake Baikal. It is 400 miles in length, and is a valuable highway for commerce. In winter it is frozen over and becomes a highway of trade and travel.

Review Topics.—Compare Asia with the other continents in size. Physical features. Population. Its three divisions. Northern Plain. The tundras. Forest region. Steppes. The Central region. Its extent. Divisions. The eastern. The Himalayas. The western portion. The surface of the peninsulas. What makes them interesting? The chief rivers of the eastern slope of Asia; of southern slope. What two great purposes do these rivers serve? Name the rivers of western Asia; of the Northern Plain. Which are the longest rivers of Asia? How long are they? What is said of the salt lakes? The largest? What is said of the Dead Sea? Name the largest of the fresh-water lakes.

The Yangtze river cutting its way through the mountains. This river is the great commercial highway of China. It is navigable for ocean steamers 700 miles, and for smaller vessels, 1,500 miles higher. There are many dangerous rapids, and from 50 to 200 men are required to pull each boat up the stream past these rapids.

LXV. CLIMATE, VEGETATION, RACES.

1. Climate.—The Northern Plain receives the cold winds of the Arctic Ocean. Its winters are long and severe, and its summers short.

Central Asia, between the Altai and Himalaya Mountains, has generally a temperate climate, with the exception of Tibet, which, owing to its elevation, is bleak, and largely uninhabitable.

The great peninsulas of the south, and the desert plateaus of Western Asia have, for the most part, a tropical or hot climate.

2. Moisture.—A glance at the physical map shows that most of Asia west of the Hala Mountains (which form the boundary between the plains of the Indus and the plateau of Iran), and south of the fortieth parallel of latitude, is poorly watered.

This region is mainly occupied by the **plateaus** of Iran and Arabia, which are enclosed by low mountains that border the coast. These mountains rob the sea breezes of their moisture, and render the interior plains generally dry and barren.

Eastward of the Hala Mountains we find the **peninsulas** of India and Indo-China. They lie

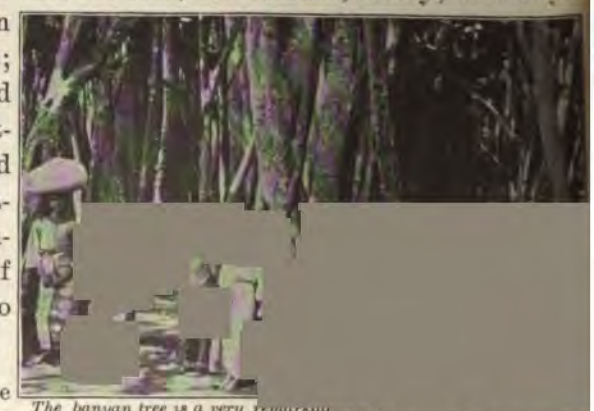
The valley of the Irawadi at Mandalay, showing palace and temples of the last king.

in the region of the southwest monsoons, which come from the sea loaded with moisture. Consequently these peninsulas are abundantly watered and exceedingly fertile.

The **Monsoons** are so named from the Arabic word for *season.* For six months, including the winter, the winds come from the interior and are dry: these are the northeast monsoons. For the other six months, which are the summer months, the winds come from the sea and are moist: these are the southwest monsoons. They bring clouds and make the rainy season. The annual rainfall of India varies from 66 inches at the mouth of the Ganges, to 500 inches among the mountains.

3. Vegetation and Animals.—Besides the difference in amount of moisture, there is also a marked contrast between the vegetation and animals found in the country east and those found in the country west of the Hala Mountains.

On the **east** we find the teak, the bamboo, ebony, and banyan trees; cinnamon and other spices; the sweet-scented sandalwood, cotton, rice, and indigo; the tea-plant and camphor tree of China, the mango and the banana.



The banyan tree is a very remarkable [illegible] grow downward and take root, as shown in the picture.

Here also are found, in the

This is a farm house in the great flood-plain near Shanghai.

LXVI. CHINESE EMPIRE.

1. The **Chinese Empire** occupies the central part of Eastern Asia. It includes China, Mongolia, Manchuria, Tibet, Eastern Turkestan, Sungaria, and embraces an area larger than the entire continent of Europe.

The estimated **population** is about 400,000,000, or about one-fourth that of the entire globe. It is chiefly Mongolian.

2. China.—China consists of the great plains of the Hoang and the Yangtze rivers, together with adjoining mountain regions. The **climate** is varied, and resembles that of our own country. The **soil** is fertile.

Curling the tea leaves. One man is curling the leaves with his feet, the other is arranging them on pans to put in the sun to dry.

Assorting tea leaves after they have been dried.

China is one of the oldest and most densely populated countries in the world.

The land is filled to overflowing with **people.** For want of dwelling space near large cities, no less than three millions of the people live in boats, which are arranged in streets on the rivers, as houses are on the land. Every available foot of land is under cultivation.

3. Mineral Wealth.—The Chinese coal-beds are among the most extensive in the world. Iron and salt, gold, silver, copper, quicksilver, lead, zinc, and precious stones abound. The deposits of porcelain clay are very large.

4. Pursuits and Productions.—Of all pursuits, agriculture is the most honored by the Chinese.

To do it homage, the Emperor, every New-Year's-Day, puts his hand to the plow and runs a furrow.

Tea is the great agricultural staple.

Tea is the leaf of an evergreen shrub that grows about five feet high. The leaves are picked by hand, rolled, and dried. The laborers are paid a few cents a day.

Cotton and the mulberry-tree are extensively cultivated. The culture of silk is as important as that of tea. Rice and millet are the chief articles of food.

The leading **manufactures** of China are silk, cotton, and porcelain.

Great use is made of the bamboo in building houses, boats, and bridges, and in making furniture and household utensils.

The Chinese are extensively engaged in **sea fisheries.**

Commerce.—China has a vast internal commerce.

This is carried on by rivers and canals, as most roads are passable only for carts and wheelbarrows. In the mountains donkeys are used, and in the deserts, the camel. Railroads are being introduced. All the principal cities of the Empire are now connected with one another and with the capital by telegraph. The Chinese and Russian lines together place Pekin in telegraphic communication with Europe.

China is rapidly enlarging its **foreign** intercourse.

In former times the laws of China excluded all foreigners from the country. For a long time the port of Canton only was open to foreign trade. Forty-three ports are now open, among them that of Ichang on the Upper Yangtze, in the very heart of the Empire.

Packing tea in bales at Tientsin.

Bringing tea over the mountains to market in western China.

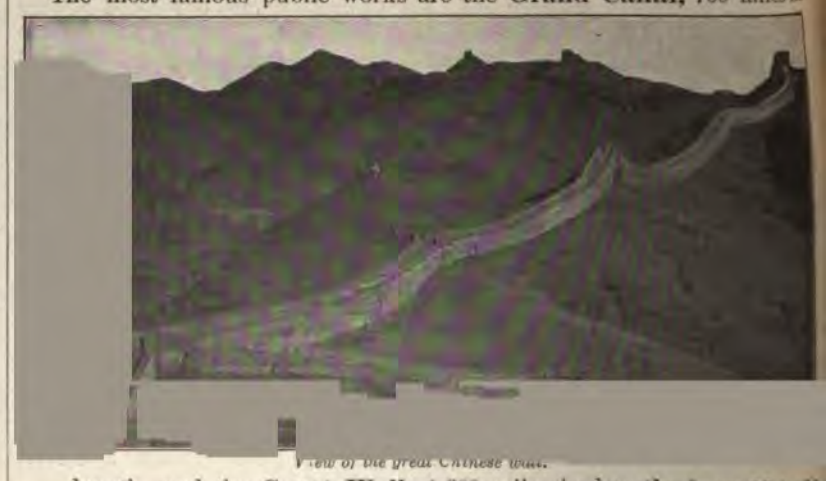
There is a great **caravan** trade between China and Russia, which has its rendezvous at Maimatchin. (See Trade Chart, pages 166 and 167.)

The principal **exports** are tea and raw silk. The chief imports from the United States are cotton cloth and yarn, kerosene, tobacco, and lumber. China has a large trade with Southern Asia, from which she imports vast amounts of rice.

5. People.—The Chinese are industrious, patient, economical, and ingenious.

They invented gunpowder and the mariner's compass, and have understood the art of printing, paper-making, and manufacturing "China" ware for ages. Their skill in the carving of ivory is marvelous.

The most famous public works are the **Grand Canal,** 700 miles in length, and the **Great Wall,** 1,200 miles in length, from 15 to 20 feet high, and so broad that six men on horseback can ride abreast upon it.



View of the great Chinese wall.

It was designed as a work of defense against the invading **Tartars**

LXVII. JAPAN.

A water mill and Japanese village, with the famous volcano, Fujiyama, in the background. Between the first two buildings on the left is a water wheel which runs a mill.

1. Japan consists of four large islands, Hondo, Kiushu, Shikoku, and Yezo, together with the southern half of Sakhalin, and numerous smaller islands.

Its **area** and **population** are a little large than the area and population of the British Islands.

The **coasts** are generally bold and rocky, and abound in convenient harbors.

The country is **mountainous,** and in many places volcanic. It is more subject to earthquakes than any other region.

Making raw silk in Japan. 1. The woman is feeding the silkworms with mulberry leaves. *2. After the worms are full grown they spin a cocoon about themselves; the cocoons are then plunged into boiling water to kill the worm, who would otherwise eat his way out and spoil the silk.*

Fujiyama, with its majestic cone of snow, is an extinct volcano rising 14,000 feet above the sea. It was formerly an object of veneration.

Near Kiushu there is a small islet with a volcano, which, like Stromboli, in the Mediterranean, serves as a lighthouse.

2. Mineral Resources.—Japan is not rich in mineral resources; but copper and iron are abundant, and gold, silver, sulphur, and coal are mined. Mineral springs abound.

3. Climate.—The climate resembles that of our Atlantic seaboard, though it is somewhat milder, owing to the insular position of Japan.

At **Tokyo** the summer temperature ranges from 70° to 90°; in winter the snow seldom lies long.

4. Productions.—The principal crops are rice and tea. Rice is the chief article of food.

Among the productions are the tree from which the Japanese get the **gum** for their beautiful "Japan ware"; the **wax-tree,** from which they get a kind of wax for their candles—the manufacture of which is an important industry; and the **paper-mulberry,** from which they manufacture paper.

The chief **exports** are silk, rice, tea, camphor, copper, and cotton goods. The chief imports are iron and steel goods, machinery, flour, kerosene, and tobacco.

5. People.—In commerce, manufacturing, and general enterprise the Japanese are the most progressive of the Mongolian race. Since 1854 they have opened their ports to foreign trade and residents. Hundreds of steamers ply regularly between Japan and ports of our own and other countries.

In the manufacture of **porcelain** the Japanese are equal to any nation in the world; in certain kinds of metal work they excel all; their **silk** fabrics are of superior excellence; they make numerous varieties of **paper,** many of which are very beautiful. "Japan ware" is made by them alone.

They have adopted the best features of the military systems of modern nations, and have introduced post-offices, railways, and telegraphs.

6. The Government is a monarchy. The "Mikado" is aided by a Great Council. A constitution has been adopted.

7. Education.—Public schools have been established, and the education of boys is universal and compulsory. The Imperial University of Tokyo is an institution of high rank.

3. The cocoons are put in warm water to loosen the fiber, which is then reeled off into hanks.

4. Packing the hanks of raw silk into bales, some of which are brought to Paterson, N. J., to be woven. *(See page 54.)*

The Japanese used the art of printing long before it was invented in Europe. They have a literature of great antiquity and repute. Many Japanese students are educated in Europe and the United States.

8. Religion.—There is no state religion. The people are largely Buddhists. Many, however, have become Christians.

9. Customs.—Many curious customs prevail.

Owing to the fact that the country is so subject to earthquakes, the **dwellings** are generally of wood. They are all built according to one of three or four plans; so that, in furnishing a house, you have only to go to the upholsterer and order mats and other articles for a house of one or other of these patterns.

The Japanese have no chairs, sofas, or beds; they use their clothes for bed-covering, and sleep upon the mats on which they sit during the day.

10. Cities.—The cities of Japan are numerous. **Tokyo,** the

Planting rice in Japan.

LXIX. BRITISH ASIA.

1. British Asia comprises the great peninsula of India, together with Burma, Assam, the Straits Settlements, Ceylon, the Andaman and Nicobar islands, and other islands.

2. India.—On the northern border we find the vast range of the Himalaya Mountains.

Near Darjeeling, 8,000 feet above the sea. The mountains in the distance are the highest summits of the Himalayas.

At their southern base lie the great plains of the Indus and Ganges, one of the richest and most populous regions in the world. (See Physical Map, p. 135.)

Still farther to the south rises the plateau of the Dekkan.

3. Productions.—The mineral wealth of India is not large.

Iron, gold, and precious stones are, however, found in considerable abundance, and much coal is mined.

The great productions of the country are **agricultural.** They are rice, wheat, cotton, jute, silk, opium, indigo, tea, sugar, and tobacco.

Millet and **rice** are the chief articles of food. Two crops of rice are raised every year.

The preparation of tea in India. A furnace in which the leaves are wilted and partially dried.

A machine for curling tea.

India raises vast quantities of **cotton,** which is the principal material for clothing. The sugar crop is immense.

Opium is made from the poppy, and the cultivation of this plant is an important branch of industry. It is largely chewed and smoked by the Chinese, Japanese, and the inhabitants of the East India Islands. The entire proceeds of the tea crop are said to be insufficient to pay for the opium annually brought into China and consumed there.

Making tiles at Mysore.

Jute is used in making gunny-bags, in which many of the products of India are packed. It is largely used also in manufacturing carpets.

4. The Commerce of India is immense. A great maritime trade is carried on with England and China, and an important caravan traffic with central and western Asia.

Internal commerce is rapidly developing by the aid of the **railways** that connect the principal cities and seaports. The large rivers are navigated by steamers.

The country is traversed by a network of navigable and irrigating **canals,** some of which are thousands of miles in length.

The chief **exports** are cotton, rice, jute, oil-seeds, opium, tea, hides, indigo, wheat, and coffee. Cotton cloth and hardware are the largest imports.

For ages the trade of India was the richest traffic of the world. The English **East India Company,** having grown rich and powerful through its monopoly of this trade, achieved the splendid conquest which gave to England this most valuable of her possessions.

5. The Inhabitants number about 290,000,000. They are generally known as Hindus, though there is great diversity of race, language, manners, and customs among them.

Interior of a tea house.

Carts at the factory being loaded with tea for Calcutta.

They were formerly noted for their skill in the manufacture of textile fabrics.

The muslins of Dacca, the brocades of Benares, the embroideries of Delhi, long rivalled the products of the finest modern machinery. The shawls of Kashmir are still unsurpassed.

More than two thousand years ago India was the seat of an **empire** of vast wealth. Its wonderful antiquities and magnificent ruins, its extraordinary poetical and religious literature, tell in eloquent language of the grandeur of the past.

European civilization is now rapidly extending over the country.

The leading **religions** are Brahmanism and Mohammedanism. About two millions of the people have become Christians.

6. Government.—The King of England is "Emperor of India," and rules through a governor-general.

Bathing ghat at Calcutta.

LXX. AFGHANISTAN, BALUCHISTAN, PERSIA, AND ARABIA.

1. Afghanistan and Baluchistan.—Afghanistan and Baluchistan occupy the eastern portion of the Plateau of Iran, and are for the most part desert. Some of the mountain valleys are, however, well watered and fertile.

Afghan women. Notice the shawls over their heads. From these the afghan, worn by ladies, takes its name.

These valleys are inhabited by a settled population, but the country generally is peopled by warlike nomads, who raise camels, horses, goats, and sheep on the good pasture lands.

Most of Baluchistan is now under the control of Great Britain.

The chief **caravan** routes between India and western Asia lie through this region, which is separated from India by the Sulaiman and Hala mountains.

The two great passes through these mountains, the **Khaibar Pass** leading to Kabul, and the **Bolan** leading into Baluchistan, may be called the northwestern gates of India. The Bolan Pass is a wild gorge about fifty miles long, walled in by precipitous rocks. In 1839 a column of the British army took six days to traverse it.

Women of the working class weaving a Persian carpet.

The principal **depots** of the **caravan trade** are **Kabul, Herat, Kandahar,** and **Khelat.** Kabul, in the Khaibar Pass, is the capital of Afghanistan, Khelat of Baluchistan.

England and Russia are rivals for the control of the commerce of these countries. England has built railroads as far as New Chaman and Peshawar in the south, and a Russian road has nearly reached Herat.

2. Persia.—Persia occupies the western part of the Plateau of Iran.

It is a dry country, requiring for the most part artificial irrigation; but wherever there is water, the hills and valleys are clothed with waving wheat or fragrant roses, and the pastures are covered with flocks and herds.

Water is conveyed to the plains from the mountain springs or streams by long underground aqueducts called *kenats*.

The **climate** of Persia generally is one of great extremes. The summers are intensely hot, the winters bitterly cold. The region bordering the Caspian Sea has a comparatively mild climate.

One of the summer homes of the Shah of Persia.

3. Productions.—Silk is the most important production. The other products are cotton, tobacco, opium, drugs, wool, wine, minerals, naphtha, salt, and the turquoise.

The **artisans** of Persia are skilled in various branches of industry, especially in the manufacture of silks, shawls, carpets, and small-arms.

The chief **exports** are cotton, silk and silkworm eggs, opium, carpets, dried fruits, and pearls.

In these dry countries the **fruits**, such as grapes, peaches, pears, apricots, nectarines, plums, cherries, figs, pomegranates, and melons—both canteloupes and watermelons—are unsurpassed.

A port in Persia on the Caspian Sea where caravans from Teheran and other Persian cities meet. Notice the packages of merchandise piled up in front of the warehouses and the Persians watching the steamer as it approaches.

4. Government.—Persia is one of the oldest monarchies in the world. The ruler is called the Shah, and is a Mohammedan.

Western civilization is finding its way into this country. Telegraphs and post-offices have been introduced.

5. Cities.—**Teheran** is the capital. **Tabriz** is an important center of caravan trade between Persia and India on the one hand and Turkey and Russia on the other.

Ispahan, once the capital, is an important center of trade.

Meshed, the holy city, manufactures carpets and shawls; **Bushire** on the Persian Gulf, has important commerce with European countries.

A Persian village.—The men and women are weaving mats.

6. Arabia.—Arabia is a great plateau. It has three natural divisions, nearly equal in size: a central mountainous region; a desert belt encircling this; a narrow coast plain.

Central Arabia contains many towns and villages. Its valleys are exceedingly productive.

This is the home of an Arab family of Bedouin. The man is weaving cloth for a tent. The woman is spinning.

The **desert belt** has a scanty vegetation which furnishes food for the goats and camels of the Bedouin or wandering Arabs. Here and there groves of date-palm mark the fertile spots, or oases. The desert is often swept by the dry scorching wind called the simoon.

The **coast plain** contains fertile districts which yield coffee, dates, figs, grapes, fragrant gums, and spices in great profusion. This region was anciently called "Araby the Blest."

The **exports** are coffee, dates, camels, horses, pearls, and wool.

Off the island of Bahrein, in the Persian Gulf, is one of the most noted **pearl fisheries** in the world.

Bethlehem.

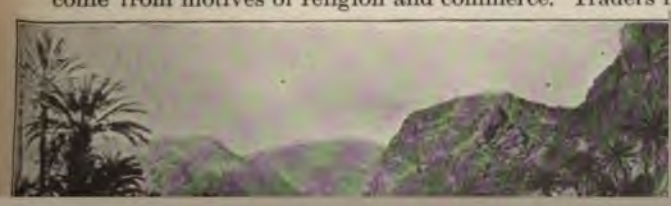
7. Government.—Arabia is divided into petty states under separate rulers.

Nedjed, Shomer, and **Oman** are the most important. Riad, Hayel, and Mascat are their capitals.

Yemen and **Hedjaz,** on the western coast, are fertile districts. They are Turkish provinces.

Hedjaz contains the holy cities of the Mohammedans—**Mecca,** the birthplace of "the prophet," and **Medina,** his burial place.

Every Mohammedan tries to make a **pilgrimage** to these cities once in his life. Enormous caravans visit them every year. The pilgrims come from motives of religion and commerce. Traders from various Mohammedan countries meet at Mecca and exchange their commodities.



A valley in the mounta[illegible]

Sana is the capital of Yemen, famed for its Mocha coffee. **Mascat** is an important center of commerce.

Arabia contains Mount Sinai.

Review Topics.—What countries occupy the eastern part of the Plateau of Iran? Describe the country and inhabitants. Caravan routes. Mountain passes. Bolan Pass. Chief cities. What country occupies the western part of Iran? Describe it. Kenats. Climate. Productions. What of the artisans of Persia? Chief exports. Fruits. Government. Modern civilization. Teheran. Tabriz. Ispahan. What is Arabia? Natural divisions? How much of the country does each division occupy? Central Arabia. Desert belt. Coast plain. Exports. For what is Bahrein noted? How is Arabia governed? Principal states. Capitals. Yemen and Hedjaz. Mecca. Medina. Pilgrimages. Sana. Mascat.

LXXI. ASIATIC TURKEY AND ASIATIC RUSSIA.

1. Asiatic Turkey.—Asiatic Turkey includes Anatolia, Armenia, Syria, Mesopotamia, or the low plains of the Tigris and Euphrates, and the western coast of Arabia.

Jerusalem.

These constitute the most important part of the Turkish Empire.

Anatolia, Armenia, and Syria contain **valleys** of great **fertility,** where the vine, the olive, the mulberry, poppy, cotton, wheat, tobacco, and fruits grow abundantly and yield large crops.

The plains of **Mesopotamia** are covered with vegetation during the rainy season, but become dry and barren during the summer.

Asiatic Turkey has great natural resources. Powerful empires once flourished here. An oppressive government is the chief obstacle to prosperity.

The leading **exports** are raisins and figs, olive oil, opium, silk, wool, goat's hair, sponges, and valonia, used for tanning, dyeing, and ink-making.

On the banks of the river Jordan.

2. Government.—Each province is governed by a Pasha appointed by the Sultan.

The **inhabitants** are Mohammedans, Christians, Jews, and Gypsies. They are for the most part in a low condition of civilization.

3. Syria contains Palestine, or the Holy Land. Here are Jerusalem and its suburb, Bethany, and Bethlehem, the birthplace of Jesus.

Sponge and coral fisheries on the coast of the Mediterranean are important sources of Syrian commerce.

Smyrna, the principal seaport of Asiatic Turkey.

Sponges are animal productions, living in water from 30 to 150 feet deep, and attached to rocks or shells. They are gathered by divers.

Smyrna is the great port of Asiatic Turkey. **Damascus,** the oldest city known, and **Bagdad,** are centers of a great caravan trade. **Beirut** is the port of Damascus.

Aleppo is a great rendezvous of caravans from Persia and India.
Brusa is an important emporium, famed for its delicate fabrics of silk.

Review Topics.—What does Asiatic Turkey include? What do these constitute? Products of the valleys. Of the river plains. Why is not Turkey prosperous? Exports. Caravan trade. Government. Inhabitants. What does Syria contain? Products of the sea. Sponges. Cities.

ASIATIC RUSSIA.

1. Asiatic Russia.—Asiatic Russia embraces all of northern Asia, and extends from the Black Sea to the Pacific Ocean.

It includes Siberia, Transcaucasia, and Russian Turkestan.

2. Siberia.—Siberia is larger than all Europe, while its population is only a little more than that of the Netherlands.

Siberian railway station.

3. Surface.—More than half of Siberia lies in the great northern plain. That part bordering the Arctic Ocean is a level swamp, called the **tundras.**

The mouths of the great rivers that cross this region freeze very early every winter while the water is still flowing in their upper courses. This floods the tundras, and a little later they freeze, making a solid ice sheet over which the natives travel on sledges. In summer the ice thaws and the tundras become impassable swamps overgrown with coarse grass.

The central part is rolling and covered with forests which are a part of a great forest belt extending from the Baltic to the Pacific. The southwestern part consists of a low and dry plateau called the **steppes.** Southern and eastern Siberia lie in the mountain region of the continent.

4. Climate.—The climate in the north is intensely cold; in the central and southern sections the winters are not so cold, and the summer heat is intense.

5. Rivers.—The chief rivers are the Ob, the Yenisei, and the Lena, which cross the central plain from south to north, and the Amur, which cuts its way through the mountains and flows into the Okhotsk Sea.

These rivers are all navigable, but their mouths being frozen over for the greater part of the year they are of no value to foreign commerce. Their upper courses, connecting canals and Lake Baikal, furnish waterways for local trade in the interior.

6. Products.—The products are small in comparison with the vast extent of the country.

The **forests** are the homes of fur-bearing animals, and their furs are an important product.

Agriculture.—The southern half of the great plain is a rich agricultural region, which has developed rapidly since the building of the railroads. Large crops of wheat, rye, and oats are produced; on the steppes, the great grazing region, are vast numbers of sheep, horses, cattle, and camels.

Minerals.—The mountain regions are rich in emeralds, rubies, gold, silver, platinum, copper, and iron. The mines, as a rule, belong to the Czar, and are worked by convicts, most of whom are sent from Russia.

The **manufactures** are not important. They include metals, woolen goods, leather, and lumber products.

The first train on the Siberian railway.

7. Population.—The population at one time consisted chiefly of exiles and convicts from Russia, government officers, and a few barbarous natives. Since the building of the railroads several million persons have come in from Russia.

The Kirghiz of the steppes live in tents and roam from place to place with their flocks and herds. They are ignorant but hospitable.

8. Trade.—The **exports** are furs, the products of the mines, and fossil ivory, which is found all over northern Siberia.

This **ivory** is the tusks of animals called mammoths, which became extinct before the history of man begins. They were twice as large as an elephant and were covered with wool and long hair. Not long ago the body of one of these animals was found frozen up in ice, where it had been preserved for ages. The flesh was in such good condition that a party of explorers cut it up and fed it to their dogs.

Most of the **imports** come from Russia; but we sell Siberia farming utensils and steel.

Trade Route.—An extensive trade is carried on between Pekin and

Siberian farming scene.

AFRICA.

LXXII. PHYSICAL FEATURES.

1. Africa, chiefly in the Torrid Zone, is noted for its deserts, its magnificent rivers, luxuriant vegetation, and barbarous races.

This continent ranks next to Asia in **size** and is joined to it by the narrow isthmus of Suez. Its long **coast line,** unlike that of Europe, has few indentations.

2. Surface.—Africa is a vast plateau from 1,500 to 5,000 feet high, and surrounded by a belt of low, marshy, malarious land, varying in width from a few miles to two hundred.

The Atlas mountains in Algeria.

The Libyan Desert near Cairo, showing the great pyramids at Ghizeh.

MAP STUDIES.—What sea on the north? On the northeast? What connects these two seas? In what latitude is Africa? What parallel crosses the northern part? What cape forms the eastern extremity? The southern? The western? Where does Africa approach nearest the mainland of Europe? What strait separates it from Europe? Where is the Cape of Good Hope? Why was it so named? What large island off the eastern coast of Africa? What groups of islands northwest? What islands in the Gulf of Guinea? At the mouth of the Gulf of Aden? Off the eastern coast? Is the coast line of Africa regular or indented? What gulfs do you find on the northern coast? What bays on the eastern? On the western?

Surface.—Where are the African highlands? What is their direction? What lakes do they contain? What three great rivers have their sources in these? What mountains along the northern coast? Along the southern coast? What plateau north of the Gulf of Guinea? Where are the Kamerun Mountains? What desert region in the south? In the northeast? Where is the Sahara or Great desert? What two high mountains near the equator?

Lakes and Rivers.—Which is the longest river in Africa? Which two flow into the Atlantic? Describe the course of the Nile. Name four large lakes south of the equator? What river drains central Africa? (There are falls and rapids in its lower course around which a railroad has been built.) Where is Lake Chad? Why has it no outlet? Describe the Orange river. The Vaal. The Senegal. The Limpopo. What tributaries has the Nile? In what plateau do they rise?

Climate.—In what zones is Africa? In what wind belts? Along which coast are the highest mountains? How does this affect the climate of the interior? Explain why the northern part of Africa has little rain. Account for the Kalahari desert. What parts of Africa are in reach of the westerly winds (see wind chart, p. 166)? What of the rainfall in these parts? Why is northeastern Africa desert, while southeastern Africa has abundance of rain?

The Suez Canal.

The highest **mountains** are situated eastward and westward of Victoria Nyanza. On the west is Mount Ruwenzori, about 19,000 feet high, the highest peak of several which were anciently called the "Mountains of the Moon." On the east are th of Kenia and Kilimanjaro, more than 19,000 feet high. are the highest in Africa, and are above the snow line.

The other important ranges are the Atlas, on the no Kamerun, on the western coast, and the Snow Mount Cape Colony, on the south.

The peak of Teneriffe is a celebrated volcano on one Canary Islands; it is 12,182 feet high, and the winds at and bottom often blow trary directions.

3. Deserts.—The great of Sahara, the Libyan and deserts in the north, a Kalahari Desert in the though barren themselve tribute largely to the pro ness of the more favored of the continent.

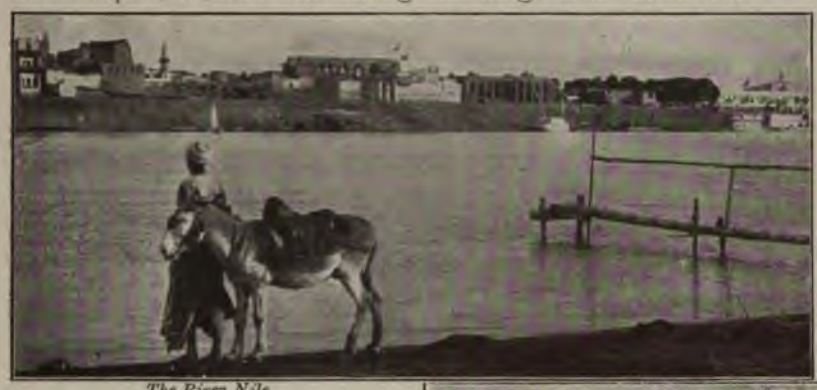
The **Atlantic slopes** and t

The South African plateau in Cape Colony.

Productions.—What tropical fruits are found in the nort of Africa? In what parts are palm trees found? What farm are raised in Egypt? In South Africa? In what parts do coffe ton flourish? Where is ivory found? What section produce Sugar? Ebony? Gold? Gums? In what parts is the elephan What animals are common in the Sudan region? What min found in the southern part? In the desert? What are the produ Madagascar? Of the Azores and Canary Islands? Of Socotra Of Mauritius and Reunion Islands? In what section is the t found? The crocodile? The lion? Monkeys and parrots? The rhi What regions raise sheep and goats? Cattle?

of the Cape owe their fertility to these deserts. The hot sun so rarefies the air that **vapor-laden winds** are drawn in from the sea. Rising to the cool tops of the coast mountains, the vapor is condensed and yields a considerable rainfall.

4. Rivers and Lakes.—Africa is the driest of the continents. There are, however, great rivers, such as the Nile, the Niger, the Kongo, and the Zambezi. The Nile and the Kongo are the most important, and are among the longest in the world.



The River Nile.

MAP STUDIES.—What two nations control the larger part of Africa? What colonies border the Gulf of Guinea? The Red Sea? The Mediterranean? What lakes border German East Africa? What part of Africa belongs to Turkey? In which part are the most railroads? What colonies border the Indian Ocean? What state in the central part of Africa? Through what divisions does the Nile pass? The Niger? What countries are separated by the Kongo river?

The Kongo river and Kinchassa, the principal Belgian port.

Region of the Nile.—What is the source of the Nile? What possessions on the west of Egypt? On the south? What cities at the extremities of the Suez Canal? Where is Alexandria? Damietta? Cairo? Assouan? Near what circle is the first cataract of the Nile? What important city at the junction of the two Niles? How could you travel from Khartum to Cairo? From Berber to Suakin? What are the products of the upper Nile region? What cities in the Egyptian Sudan? Where is Fashoda? El Fasher? What is the capital? Describe the surface of Abyssinia. What is the capital? Locate Harar. With what seaport is it connected?

The Barbary States.—Which of these states belong to Turkey? To France? Which is independent? What mountains cross Morocco and Algeria? How do they affect the climate? Where is Tunis? What caravan routes center at Tripoli? Through what oasis do they lead? Name the capital of each Barbary State. Locate Tangier, Oram, Algeciras, Constantine, Murzuk, and Mekinez.

The Sahara, Sudan, and the Kongo State.—What is the extent of the Sahara from east to west? From north to south? How does it compare in size with the United States? Name some of its oases. Which of them produce salt? What town north of the bend of the Niger? What caravan route passes through it? To what nations does the Sudan belong? What waters form part of the boundary of the Kongo State? What branches of the Kongo pass through it? Where are its highlands? What is its capital and seaport?

The Western Coast.—Name the British colonies on this coast. The French. The German. The Portuguese. Name the capital of each colony. Locate Lagos, Bathurst, Loanda, Windhoek, Libreville, Monrovia and Freetown. What are the divisions of Nigeria? What are the chief productions of the western coast?

Southern Africa.—To what nation does the greater part of it belong? What two other nations control part of it? Name the British colonies in South Africa. What is the capital of Cape Colony? Of Transvaal? Of the Orange River Colony? Where is Swakopmund? With what interior city is it connected? What is the importance of Port Nolloth? Locate Salisbury. Kimberly. Maseru. Durban. Mafeking.

The Kongo is the largest river in Africa, from eight to ten times broader than the Mississippi. With its tributaries it affords about four thousand miles of navigable waterways.

Victoria Nyanza, Albert Nyanza, Albert Edward Nyanza, and Tanganyika are among the largest **lakes** in the world. The first three are drained by the Nile. (*Nyanza* means lake.)

5. Climate.—Africa is the hottest of all the continents. The climate, however, varies in different parts.

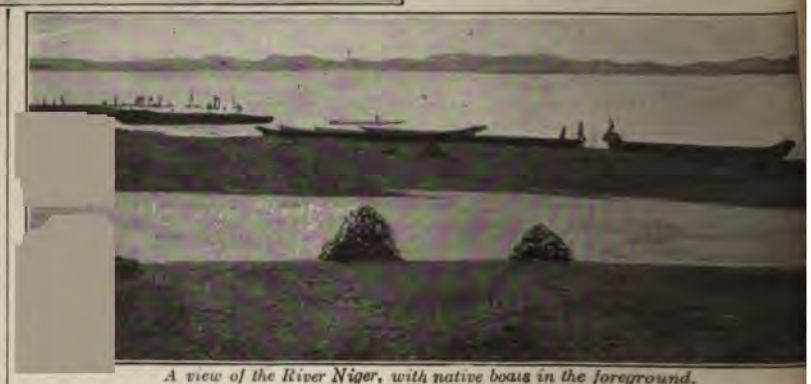
The **northern portion** lies in the region of the northeast trade-winds; and these, coming from the dry plateau of Arabia, are rainless and hot. Eggs may be baked in the sands of Nubia.

Central and **Southern** Africa are largely in the region of the southeast trades. These come from the Indian Ocean and are laden with moisture, which is condensed above the snowy mountains of equatorial Africa, and, falling as rain or snow, feeds the great lakes and rivers of the continent.

6. Vegetation.—The Equatorial regions of Africa form a belt of fertile country, marked by luxuriant tropical vegetation, similar to that of South America.

On each side of this broad belt are grass lands and **prairies**; those of the Sudan on the north, and on the south the country of the Zambezi.

Beyond these again, both north and south, are the **dry** and **sandy** regions of the Sahara and Kalahari, while the extreme

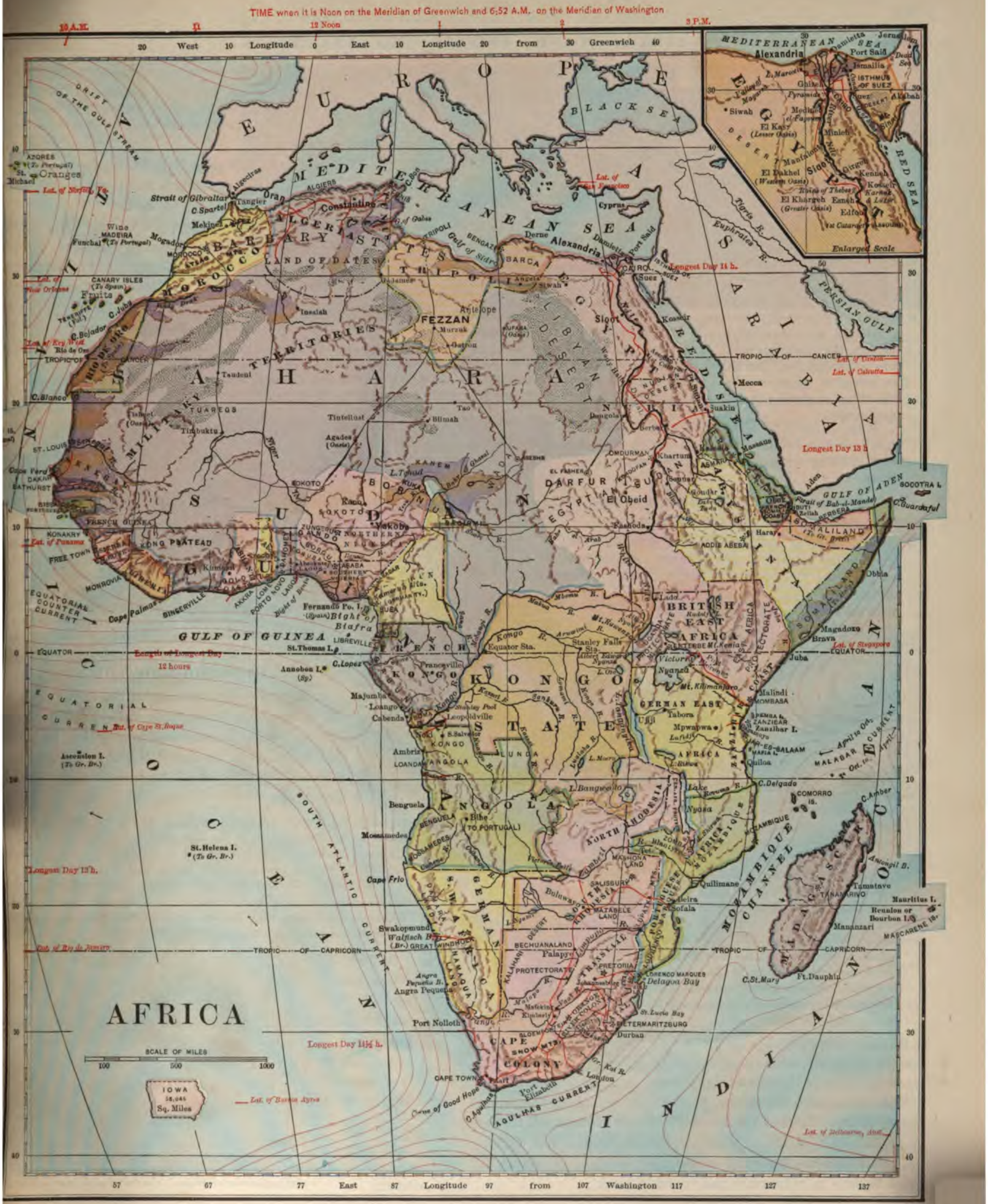


A view of the River Niger, with native boats in the foreground.

Eastern Coast.—What colonies border on the Indian Ocean? On the Red Sea? On the Gulf of Aden? What city at the mouth of the Zambezi? What port on Delagoa Bay? Where is Sofala Zomba? Mozambique? Dar-es-Salaam? Zanzibar? Juba? What French colony on the Strait of Bab-el-Mandeb? What is the capital of Madagascar?

Countries.	Area in Sq. Miles.	Population.	Countries.	Area in Sq. Miles.	Population.
Cape Colonies.....	221,311	1,327,224	Spanish Possessions.....	243,877	136,000
Other Brit. Colonies.	258,583	4,357,770			
British Protectorates.	2,279,417	45,606,000*	Italian Possessions.....	88,500	450,000
Algeria.....	184,474	4,429,421			
Tunis.....	51,000	1,900,000	Egypt.....	400,000	9,734,405
Other French Possessions	4,755,446	31,977,140*	Abyssinia	150,000	4,300,000*
			Morocco.....	219,000	5,000,000
German Possessions..	930,580	15,200,000*	Tripoli, etc.....	398,900	1,323,317*
Portuguese Possessions	792,040	8,697,790*	Liberia.....	35,000	2,060,000
			Kongo State.....	900,000	31,000,000*

* Estimated.


TIME when it is Noon on the Meridian of Greenwich and 6:52 A.M. on the Meridian of Washington
10 A.M.
11
12 Noon
1
2
3 P.M.
20 West 10 Longitude 0 East 10 Longitude 20 from 30 Greenwich 40
AFRICA
SCALE OF MILES
100
500
1000
IOWA
56,045
Sq. Miles
57 67 77 East 87 Longitude 97 from 107 Washington 117 127 137
EUROPE
ASIA
ARABIA
MEDITERRANEAN SEA
BLACK SEA
Cyprus
PERSIAN GULF
RED SEA
GULF OF ADEN
Tigris R.
Euphrates R.
Mecca
Aden
SOCOTRA I.
C. Guardafui
Strait of Bab-el-Mandeb
DRIFT OF THE GULF STREAM
AZORES
(To Portugal)
St. Michael
Oranges
Lat. of Norfolk, Va.
Strait of Gibraltar
Algeciras
Tangier
C. Spartel
Oran
ALGIERS
Constantine
TUNIS
C. Bon
G. of Gabes
TRIPOLI
BENGAZI
Gulf of Sidra
Derne
Alexandria
Damietta
Port Said
Lat. of San Francisco
CAIRO
Suez
ISTHMUS OF SUEZ
Longest Day 14 h.
Wine
MADEIRA
Funchal
(To Portugal)
Mogador
MOROCCO
Mekinez
ATLAS MTS.
BARBARY STATES
ALGERIA
LAND OF DATES
MOROCCO
TRIPOLI
BARCA
Siwah
Lat. of New Orleans
CANARY ISLES
(To Spain)
Fruits
TENERIFFE (Vol.)
C. Juby
C. Bojador
Lat. of Key West
Rio de Oro
RIO DE ORO
TROPIC OF CANCER
Insalah
FEZZAN
Murzuk
Gatron
Antelope
TERRITORIES
MILITARY
SAHARA
Taudeni
LIBYAN DESERT
KUFARA (Oasis)
Lat. of Canton
Lat. of Calcutta
C. Blanco
TUAREGS
Timbuktu
Tintellust
Bilmah
Tao
Agades (Oasis)
ST. LOUIS
Senegal R.
SENEGAL
Cape Verde
DAKAR
BATHURST
FRENCH GUINEA
KONAKRY
Lat. of Panama
FREE TOWN
SIERRA LEONE
MONROVIA
LIBERIA
KONG PLATEAU
SUDAN
Niger
SOKOTO
Kano
Yakoba
NORTHERN NIGERIA
SOUTHERN NIGERIA
LAGOS
BORNU
L. Tchad
KUKA
KANEM
WADAI
DARFUR
EL FASHER
KORDOFAN
El Obeid
EGYPTIAN SUDAN
OMDURMAN
Khartum
Sennar
Fashoda
Berber
Dongola
NUBIA
NUBIAN DESERT
Suakin
Massaua
ASMARA
Kassala
Gondar
Lake Tsana
ABYSSINIA
ADDIS ABEBA
Harar
SOMALILAND
(To Gr. Brit.)
BERBERA
Zeilah
Obok
Obbia
Magadoxo
Brava
Juba
Lat. of Singapore
EQUATOR
Cape Palmas
BINGERVILLE
AKKRA
LOME
PORTO NOVO
DAHOMEY
Bight of Benin
EQUATORIAL COUNTER CURRENT
GULF OF GUINEA
Fernando Po. I.
(Spain)
Bight of Biafra
St. Thomas I.
LIBREVILLE
C. Lopez
Annobon I.
(Sp.)
Length of Longest Day
12 hours
FRENCH KONGO
Franceville
Majumba
Loango
Cabenda
KONGO STATE
Stanley Pool
Leopoldville
Equator Sta.
Kongo R.
Stanley Falls Sta.
Aruwimi R.
Mbomu R.
Lado
BRITISH EAST AFRICA
EAST AFRICA PROTECTORATE
UGANDA PROTECTORATE
Victoria Nyanza
Mt. Kenia
Mt. Kilimanjaro
Malindi
MOMBASA
GERMAN EAST AFRICA
Tabora
Ujiji
Mpwapwa
PEMBA I.
ZANZIBAR
Zanzibar I.
DAR-ES-SALAAM
MAFIA I.
Quiloa
MALABAR
April to Oct.
Oct. to April
CURRENT
EQUATORIAL CURRENT
Lat. of Cape St. Roque
Ascension I.
(To Gr. Br.)
St. Helena I.
(To Gr. Br.)
Longest Day 13 h.
Longest Day 13 h.
Ambriz
LOANDA
ANGOLA
Benguela
BENGUELA
Bihe
(TO PORTUGAL)
Mossamedes
MOSSAMEDES
L. Bangweolo
NORTH RHODESIA
Lake Nyasa
Rovuma R.
C. Delgado
COMORRO IS.
MOZAMBIQUE
MOZAMBIQUE CHANNEL
C. Amber
MADAGASCAR
Antongil B.
Tamatave
TANANARIVO
Mananzari
C. St. Mary
Ft. Dauphin
Mauritius I.
Reunion or Bourbon I.
MASCARENE IS.
SOUTH ATLANTIC CURRENT
ATLANTIC OCEAN
Cape Frio
Swakopmund
Walfisch B.
(Br.)
GREAT NAMAQUA LAND
WINDHOEK
DAMARA LAND
GERMAN S.W. AFRICA
Angra Pequena B.
Angra Pequena
Lat. of Rio de Janeiro
TROPIC OF CAPRICORN
Victoria Falls
Zambezi
MASHONA LAND
SALISBURY
Bulawayo
MATABELE LAND
SOUTH RHODESIA
Quilimane
Beira
Sofala
BECHUANALAND PROTECTORATE
KALAHARI DESERT
Palapye
Limpopo
TRANSVAAL
PRETORIA
Johannesburg
LORENCO MARQUES
Delagoa Bay
Mafeking
Kimberley
ORANGE RIVER COLONY
BLOEMFONTEIN
NATAL
St. Lucia Bay
PIETERMARITZBURG
Durban
Port Nolloth
Orange
CAPE COLONY
SNOW MTS.
CAPE TOWN
Cape of Good Hope
C. Agulhas
Port Elizabeth
E. London
Gr. Kei R.
AGULHAS CURRENT
Longest Day 14½ h.
Lat. of Buenos Ayres
Lat. of Melbourne, Aust.
INDIAN OCEAN
MEDITERRANEAN SEA
Alexandria
Damietta
Port Said
Jerusalem
Dead Sea
Ismailia
ISTHMUS OF SUEZ
L. Mareotis
Ghizeh
Pyramids
CAIRO
Suez
Akabah
Valley of Magarah
Siwah
Medinet el Fayoum
El Kasr (Lesser Oasis)
Minieh
DESERT
Manfalout
Siout
El Dakhel (Western Oasis)
Girgeh
Keneh
Kosseir
Karnak & Luxor
Ruins of Thebes
El Khargeh (Greater Oasis)
Esneh
Edfou
1st Cataract
ASSOUAN
RED SEA
Mt. Sinai
EGYPT
Enlarged Scale

A cocoanut palm and other tropical vegetation in an African forest.

northern and southern portions of the continent are regions of extraordinary productiveness.

On the **Atlas range** and the northern borders of the Sahara is the "land of the date," and on the highlands of Abyssinia are extensive forests of the coffee-tree. The gigantic baobab, the acacia, oil-palm, sugar cane, coffee, tobacco, and cotton, are found from the Sahara to the Zambezi.

The date-palm supplies a large portion of the inhabitants with food. The oil-palm yields palm oil, and the acacia produces gum-arabic.

The palm is the most useful tree in the world. It furnishes timber and fiber from which dwellings and clothing are made, as well as fruit, oil, and wine.

7. Animals.—Strange and ferocious animals are found in great number and variety in Africa.

It is the home of the elephant and rhinoceros, the lion and the leopard, the crocodile and hippopotamus, and those strange animals, the gorilla and chimpanzee, that bear such a strong resemblance to the human form.

Native village in Kamerun.—The natives are dressed for Sunday.

The ostrich buries her eggs in the sands of the deserts; the zebra and giraffe, the antelope, and the swift-footed gnu, roam over the plains.

A great plague of central and southern Africa is the tsetse fly, which resembles our common house-fly. Its bite is fatal to horses, and sometimes to cattle, though harmless to man. In all the region between Sudan and Cape Colony, bales of goods and other merchandise are transported on the heads of negro carriers. Only to a very limited extent have roads been made on which beasts of burden could be used.

8. Inhabitants.—The **northern** portion of the continent is inhabited by Berbers, Arabs or Moors, and Egyptians.

Egyptians.

The **Sudan** and the region south of it, including the Kongo Basin, is the "land of the blacks." Some of them till the soil and raise cattle, others have skill in tempering steel and working gold, but they are generally exceedingly ignorant and degraded. They believe in witchcraft and worship idols.

South of the **Zambezi** river are found the Kaffirs and Hottentots, and in the Kalahari Desert the Bushmen, who live in caves like wild animals. It is said that the Bushmen cannot count beyond the number two.

9. Political Geography.—Egypt, Tripoli and Barca pay annual tribute money to Turkey. Nearly all the rest of Africa is owned or controlled by European governments.

Morocco is governed by its own despotic sultan; Abyssinia, by its own absolute king; the Kongo State, by the King of Belgium. Liberia is independent. Regions controlled and protected by European countries are described as "spheres of influence."

Less than two million square miles of African territory, out of a total of eleven and a half million, are non-European.

Review Topics.—Location of Africa. Rank. Coast line. Surface. Highest mountain ranges. Other important ranges. Deserts. Effect on climate. How does Africa compare with the other continents in regard to moisture? What is said of the Nile and the Kongo? Climate of northern portion. Central and Southern Africa. Vegetation in the equatorial regions. In the Sudan and the Zambezi countries. Abyssinia. Products. Date-palm. The oil-palm. The acacia. Animals of Africa. Inhabitants. Government. What States are independent?

A Kaffir village.

LXXIII. REGION OF THE NILE.

1. Egypt.—Egypt occupies the lower part of the Nile valley. The upper valley, south of the 22d parallel, is governed jointly by England and Egypt, and is called the **Anglo-Egyptian Sudan.** This region is inhabited mainly by native Arabs.

An uprising was provoked among them in 1882, by the attempts of the Egyptians to take possession of the country. Under a leader whom they called the "Mahdi," or prophet, the Arabs routed an Egyptian army and cut off and massacred General Gordon and his men at Khartum. But the Mahdi was defeated and killed in 1898 by an army under General Kitchener, and the entire Nile valley is now under the control of England and Egypt.

2. The Nile.—The Valley of the Nile is in a rainless region. Except in the Delta, rain rarely falls, and a cloud is seldom seen.

For more than 1,200 miles in its lower course the Nile does not receive a single tributary.

Manufacture of water-jars. Nile boats carrying them to market.

At **certain seasons,** however, among the mountains of Abyssinia and the equatorial region, from 2,000 to 3,000 miles distant, the rains pour down in torrents. The Nile is swollen by this rainfall and overflows its banks. Late in June the descending flood reaches Lower Egypt, and the river gradually rises until the country becomes a vast inland sea. By the end of November the waters subside, leaving a rich sediment which covers the land and renders Egypt one of the most fertile regions on the globe.

Market place at Cairo, where produce is brought on donkeys and camels to be sold. The little sheds are bazaars where goods are sold. Notice the palms and flat-roofed buildings. The land is all irrigated, and the avenue of trees is planted.

In **olden times** it was the granary of the world, the home of learning, and the seat of political power. More than 5,000 years ago the Egyptians were a highly civilized people. The ruins of their temples and pyramids are unrivalled for grandeur; while the paintings on the walls of their tombs, as bright to-day as when executed by the artist, show that they had made wonderful progress in the fine arts.

3. Productions.—The leading productions are cotton, grains, and sugar. Beans, flax, millet, and dates are grown in large quantities.

The columns of the great Egyptian temple at Karnak. The inscriptions can now be read.

4. Commerce.—Egypt has a large trade with Europe, especially with Great Britain. Four-fifths of her exports consist of raw cotton. Other exports are grain, vegetables, sugar, and tobacco. Her imports are cloth, hardware, lumber, and coal. The only manufacturing industry of importance is cigarettes, which are made at Cairo out of tobacco brought from Turkey. The lack of fuel and minerals makes farming a more profitable industry.

The Suez Canal, 87 miles long, connects the Red Sea with the Mediterranean. It forms a short and important route for commerce between Europe and Asia. It accommodates vessels drawing 25 feet of water.

5. The Population of Egypt is nearly 10,000,000. It consists mainly of Arabs and Copts. The prevailing religion is Mohammedanism. The people are ignorant and superstitious.

in the sand and is now partly excavated.

The Copts, the descendants of the ancient Egyptians, are Christians.

Government.—The government is a constitutional monarchy. The ruler is called the **Khedive,** which means king. He pays an annual **tribute** of about $3,500,000 to the Sultan of Turkey.

England has great influence in Egyptian affairs. The commander of the army is an Englishman. The steamboat, railway, post-office, and telegraph have been introduced.

7. Cities.—**Cairo,** the capital, is the largest city of Africa and a great center of trade. **Alexandria** is the principal seaport and commercial city of Egypt. **Port Saïd** and **Suez** owe their importance to their location at the extremities of the Suez Canal. **Sioot** is an important center for the caravan trade with the Sudan.

8. The Egyptian Sudan is more than twice as large as Egypt, and is divided into twelve provinces, each under a separate governor. The capital of the entire country and the seat of British authority is **Khartum,** at the junction of the Blue and White Niles.

The northern part of the country, formerly called **Nubia,** is a region of arid steppes, but south of Khartum are valuable forests of ebony, rubber, gum, and bamboo trees and fertile plains yielding cotton, grain, and vegetables. The caravans bring ivory, gold, ostrich feathers, gums, and skins from the interior and exchange them for tools, cloth, weapons, and various utensils which they sell to the natives. There is a railroad between Khartum and the Nile Delta, and also one from Berber to Suakin and Port Sudan on the Red Sea.

9. The People are negroes and Arabs. Schools are being established among them, and there is also a college at Khartum named in honor of General Gordon, in which instruction in literature, science, and the mechanic arts is given. There is also a training school for teachers.

A street in the Arab quarter of Cairo. The bay windows open into the women's apartments, enabling them to look out without being seen.

10. Abyssinia consists of three regions of elevation.

The two lower are marked by tropical vegetation. The uppermost is a grazing district.

The country is rich in gold, iron, and salt. Coffee, ivory, and gold are exported. Cotton, woolen goods, cutlery, and other manufactures are the imports.

The **people** are of the white race, and profess the Christian religion. They belong to different tribes who are frequently at war with one another. The capital of Abyssinia is composed of huts and tents, and is moved from place to place to secure supplies of food and firewood.

Review Topics—Location of Egypt. Name other countries in the Nile region. What is said of the Nile? Of the old Egyptians? Leading productions The commerce of Egypt. Exports. Suez Canal Population. Prevailing religion. Copts. Government. Alexandria. Port Saïd. Suez. Sioot. Egyptian Sudan. Abyssinia. Minerals.

LXXIV. THE BARBARY STATES.

1. Morocco, Algeria, Tunis, Tripoli, and Barca are known as The **Barbary States,** and are so called from their early inhabitants, the Berbers. Arabs, or Moors, now live there.

On the quay at Tangier.

These states extend along the Mediterranean for 2,000 miles.

They are bordered on the south by the Desert of Sahara, and are often visited by its hot winds. Their **climate,** however, is generally mild and delightful; the coast region enjoys almost perpetual spring.

The **products** of this region are wheat, dates, olives, grapes, and other fruits.

Between the Atlas Mountains and the great desert is a region known as the **Land of Dates.** Here groves of the date-palm supply the natives with food and protect them from the sun. The inhabitants are Arabs, Moors, and Berbers, and French colonists.

Tripoli and **Morocco** have a large **caravan trade** across the Sahara, with the Sudan, from whence they receive ivory, gold dust, gums, and ostrich feathers.

The trade of the Barbary States with **Europe** is important. The chief exports are grain, sheep, cattle, dates, wine, olive oil, wool, and esparto grass, which last is used for making paper.

Interior of a house in Algiers.

This region in ancient times supplied the armies and navies of Carthage, the rival of Rome.

2. Morocco.—Morocco is the largest of the Barbary States. It is an independent empire, ruled by a Sultan, who is an absolute despot.

The exports are eggs, beans, cattle, maize, gum, goatskins, almonds, and wool. English cotton goods, coffee, sugar, tea, and firearms are the chief imports.

Fez and **Morocco,** the capitals, and **Tangier** are the chief commercial cities. There is a large caravan trade with the Sudan.

3. Algeria and Tunis are the most prosperous of the Barbary States. They belong to France. Agriculture and herding are the chief occupations. There are large forests of cork-oak. There are 3,000,000 date-palms on the Sahara oases and 10,000,000 olive trees on the mountain slopes, while the number of orange, lemon, and other tropical fruit trees is increasing. Transportation is well provided for by good wagon roads and railroads to the seaports, connecting with swift steamships for the ports of Europe. Iron and zinc are the chief metals mined. The yield of phosphate rock is second only to that of the United States.

From its gardens southern France and other parts of Europe are supplied with early fruits and vegetables.

Esparto grass grows in unlimited supply on the southern plateaus. It is sent to England and France for use in making paper, and with zinc ore and cork forms the most valuable export. Iron, hides, phosphate, flax, tobacco, grains, wine, and sheep are the other leading exports. Algeria and Tunis depend upon France for seven-eighths of their imports; these consist of cloth, coal, coffee, tea, and various manufactures. From other countries they import cattle, lumber, tobacco, and leather.

Algiers, the capital, is the center of trade, and a favorite resort for invalids in winter. **Constantine** and **Oran** are important towns.

4. Tripoli.—Tripoli, having no mountains between it and the Sahara, is mostly sterile, the sand of the desert being blown in many places up to the very margin of the sea.

Tripoli, the capital, has a large caravan trade with the Sudan to obtain its products.

Fezzan, a great group of oases, belongs to Tripoli.

Water is found in abundance at depths of ten to twenty feet. Grains and fruits are cultivated. The date-palm is everywhere.

Murzuk, the capital, is the point of junction of caravans passing from the Sudan to Tripoli and Cairo. Formerly it was enriched by the traffic in slaves, bought in the Sudan, sometimes 10,000 in a year, and carried to Mediterranean cities. This traffic still continues, though forbidden by both France and England.

Tripoli and **Barca** are subject to Turkey. **Bengazi** is the capital of Barca.

Review Topics—Barbary States. Coast line. What borders them on the south? Climate. Products. Land of dates. Inhabitants. Caravan trade. Exports. How does Morocco rank among the Barbary States? Form of government. Exports. Capital. What of Fez? Algeria and Tunis. Minerals and vegetable products. What is said of the capital? Other towns. Why is Tripoli sterile? What is said of the capital? Fezzan. Murzuk. To what power do Tripoli and Barca owe allegiance?

Algiers.

LXXV. SAHARA, SUDAN, AND THE KONGO STATE

1. Sahara.—The Sahara is the largest desert in the world. It reaches from the Atlantic Ocean on the west to the Nile on the east, and is nearly two-thirds the size of the United States.

It is a part of the **great desert belt** that extends from the western

LXXVI. THE WESTERN COAST.

1. The **Lowland** forming the western coast of Africa, part of which is known as Guinea, has, in general, a hot, unhealthful climate, and a luxuriant tropical vegetation.

2. The **Resources,** particularly the agricultural capacities of West Africa, are boundless. Cotton, coffee, and rice are

A village of civilized negroes at Cape Palmas, Liberia.

grown; and the forests yield in profusion palm oil, ebony, India rubber, and other tropical products.

The entire region, with the exception of Liberia, has been appropriated by European governments.

3. The **English possessions** in West Africa are six: Gambia, Sierra Leone, the Gold Coast, Lagos, Southern Nigeria, and Northern Nigeria. These together have an area larger than California, Oregon, and Washington, and a population of about 23,000,000—all natives, except a few hundred Europeans.

Gambia is a district near the mouth of the river of the same name.

Sierra Leone was originally established by the English Government as an asylum for negroes rescued from slave traders. **Freetown** is the capital.

The **Gold Coast** extends along the Gulf of Guinea, and includes the kingdom of Ashanti.

Lagos is an island and neighboring territory on the Bight of Benin, and includes the neighboring kingdom of Yoruba.

Southern Nigeria is a valuable region between Lagos and Kamerun, inhabited by negro tribes of various degrees of civilization.

Northern Nigeria comprises large areas of the Niger Valley. Within

View on the Guinea Coast.

its limits is the old empire of Sokoto, the most extensive and populous region in the entire Sudan.

The **trade** of these colonies is only in its infancy, but is steadily increasing. All the western colonies export palm oil and nuts, ground nuts, kola nuts (used in medicine), copal, rubber, coffee, and ivory, and import cotton cloth, cutlery, hardware, firearms, and liquors.

In all of these colonies industries and transportation are undeveloped. Experimental farming is carried on and roads being built. Schools are conducted for the natives, and in m of these institutions instruction is given in the trades an agriculture.

4. The **People** are for the most part natives. Pains have taken in acquiring possession of the territories to preserve friendship.

The most widely diffused **religion** of Nigeria is Mohamme ism, and in most of the British West African colonies Mo medans are numerous. But **Paganism** still largely preva

In northern Nigeria an English and a Canadian Missionary S are at work, and have industrial and other schools at several sta Thus Christian education is being received by thousands of pu

5. Liberia is a small independent republic, established in as a home for the freed negro slaves of America who desi go there. Its capital is Monrovia, named after President Monroe. Only a small proportion of the population, however, consists of their descendants. The chief industry is coffee-raising.

Negro porters carrying ivory to the coast.

6. The **French possessions** in West Africa are Se French Guinea, the Military Territories, the Ivory Coast homey, and French Kongo.

Senegal comprises the basin of the Senegal River, and land to th

French Guinea consists of part of the coast west of Sierra Leo

The **Military Territories** (three) lie east of Senegal and French G

French Kongo is a vast area comprising nearly half a million s miles, and forming part of the lower Kongo Basin and exte north to Lake Tchad. The **population** is estimated to be eig fifteen millions.

Schools and **post-offices** have been established; railways and graphs are being constructed.

The **Ivory Coast** lies east of Liberia.

Dahomey was once the most powerful native kingdom on the coast. The king in olden times was a despot. Besides ord troops he had a body-guard of 4,000 "Amazons," or female war who were noted for their courage and discipline. When the died, a number of his subjects were sacrificed at his tomb. Th all been changed.

The **natives** are pure negroes, and are ignorant and superst They are, however, industrious, and produce the finest of pal and the best of maize. Ivory and India rubber are obtained.

Kamerun harbor on the western coast lying at anchor. Goods and passengers are brought ashore in small boats.

The Transvaal country, showing a Boer village—Burgersdorf.

4. Basutoland, northeast of Cape Colony, has a fine climate, is well watered, and is the best grain-growing region in South Africa.

5. Natal includes Zululand. Its chief exports are wool, gold, sugar, and hides. It is rich in coal.

Durban, the capital and seaport, is a modern English city. It is connected by railway with **Johannesburg** and **Pretoria.**

6. The immense territories of **South Rhodesia** and **North Rhodesia,** with the **Protectorate** of **Bechuanaland** and the **Central Africa Protectorate,** lie north of Cape Colony, and extend to German East Africa and the Kongo Free State. They are under British control.

North Rhodesia is controlled by the British South Africa Company. For administrative purposes it is divided into two sections, Northeastern Rhodesia and Northwestern Rhodesia.

The **Zambezi** is the dividing line between them. Matabeleland, Mashonaland, and the Protectorate of Bechuanaland form the southern section, while to the northward is the great basin of the Zambezi and the lake region. The entire area possesses immense deposits of gold, silver, and other minerals, and great grazing and agricultural possibilities.

A railroad from Cape Town and one from Beira in Portuguese East Africa extend into the territory, and steamers navigate Lake Nyassa and the Zambezi. Banks, churches, schools, public libraries, and hospitals have been established. **Salisbury** is the capital of Southern Rhodesia. **Buluwayo** is an important town.

7. The **Orange River Colony** is rich in gold and diamond mines and grazing lands. **Bloemfontein** is the capital.

8. The **Transvaal Colony** contains famous gold deposits. It may be called the California of Africa. It has good grazing lands.

Pretoria is the capital, and **Johannesburg,** the center of the gold mining, is now the largest city in South Africa.

Cape Colony once belonged to Holland, and many Dutch farmers (in their language, Boers) settled there. When Cape Colony became British, many of the Boers crossed the Orange river and the Vaal river and established colonies which in time became two Boer republics called the Orange Free State and the South African Republic. In 1900 these became British colonies as the result of war with England. Except in Johannesburg, the population is almost wholly Boers.

Review Topics.—Political divisions of South Africa. Products. Inhabitants. Trade.

LXXVIII. THE EASTERN COAST.

1. The **eastern coast** of Africa is held by Portugal, Germany, England, and Italy. It resembles the western in surface, climate, productions, and exports.

2. Portuguese East Africa extends from Delagoa Bay to Cape Delgado. It comprises *Mozambique* and the adjoining territories. The region possesses immense resources.

There are **forests** of ebony, *India* rubber, and sandal-wood. The Zambezi, like the Nile, overflows its valley, and the soil yields almost spontaneously. Immense **coal** beds exist, and **gold** so abounds that some have thought this the Ophir of Solomon's day. Wax and ivory are exported.

Lourenco Marques, a small town, is the capital and chief seaport. It is the terminus of the Transvaal railroad. **Beira** is the terminus of a railroad to South Rhodesia.

3. German East Africa lies north of Cape Delgado, and extends westward to the Kongo Free State. It includes part of the old empire of Zanzibar.

Coffee, cocoa, vanilla, and fiber plants are grown.

4. British East Africa also comprises a portion of Zanzibar, together with a large part of the upper Nile valley. It includes also the protectorates of East Africa and Uganda. It is bounded on the north by the Egyptian Sudan.

The **area** thus embraced contains about 1,000,000 square miles; its **population** is over 12,000,000 negroes and Arabs.

The country is being developed. **Roads** and railroads are under construction, and the natives generally are quietly settling down to agriculture and other peaceable pursuits.

Zanzibar, on the island so called, is the chief market of the world for ivory and cloves.

5. Italian Africa consists of portions of the Red Sea coast, to which the name Eritrea has been given, and of a protectorate on the Somali coast. The pearl fisheries are valuable.

General view of Kimberley, showing buildings around the diamond mines.

6. Somali is shared by England, France, and Italy. It is peopled mostly by nomadic tribes. It is noted for the production of gum Arabic and myrrh. It exports these, together with ostrich feathers, ivory, gold dust, and cattle.

The chief town is the seaport of **Berbera,** where a great fair is held every year. At that time the place is crowded with thousands of traders from various parts of Asia and Africa, who come here and exchange the products of the two continents.

7. Madagascar is a colony of France. It has adopted Christianity, and is advancing in civilization.

Its climate and products are alike, but its animal life is very different from that of South Africa. It is rich in soil and minerals. One of its products is the **traveler's tree,** the leaf-stalks of which contain as much as a quart of pure water, even in dry weather. Persons and freight are transported on the shoulders of bearers; but wagon roads and railways are being built.

The island of **Mauritius** belongs to Great Britain; **Reunion,** to France. They are extremely fertile, and export sugar, coffee, vanilla, and Sisal hemp.

Review Topics—What powers control east Africa? Describe their possessions. Products. Inhabitants. Madagascar. Mauritius. Reunion.


AUSTRALASIA
AND
OCEANIA
SCALE OF MILES
IOWA 55,045 Sq. Miles.
TIME when it is Noon on the Meridian of Greenwich
Longitude from Greenwich East West
UNITED STATES
San Francisco
NORTH PACIFIC CURRENT
SARGASSO SEA
HAWAIIAN ISLANDS (To U.S.)
TROPIC OF CANCER
TROPIC OF CAPRICORN
EQUATOR
P O L Y N E S I A
M I C R O N E S I A
M E L A N E S I A
MALAYSIA
PACIFIC OCEAN
INDIAN OCEAN
AUSTRALIA
WESTERN AUSTRALIA
NORTHERN TERRITORY
SOUTH AUSTRALIA
QUEENSLAND
NEW SOUTH WALES
VICTORIA
TASMANIA
NEW ZEALAND
CORAL SEA
NEW ZEALAND SEA
PHILIPPINE ISLANDS (To U.S.)
LADRONE IS.
CAROLINE IS.
MARSHALL ISLANDS
SAMOA or NAVIGATOR IS.
FIJI IS.
CHINA
JAPAN
SIAM
BORNEO
SUMATRA
PAPUA or NEW GUINEA
HAWAIIAN ISLANDS
On an enlarged Scale.
South East Part of
AUSTRALIA
On an enlarged Scale.

3. Coral Reef.—Many of the coral islands are surrounded by coral reefs at some distance from the shore. Between some of them and the shore ships ride in deep and smooth water. Such a reef skirts the northeast coast of Australia for more than a thousand miles. It varies in breadth from a few yards to nearly fifty miles.

4. Malaysia.—The islands southeast of Asia are called the

In the island of Sumatra.—Native houses and a temple.

Malay or East Indian Archipelago; sometimes Malaysia. Java, Sumatra, Celebes, the Moluccas, or Spice Islands, parts of Borneo and of New Guinea, with several smaller islands, belong to the Netherlands, and are known as the **Dutch East Indies.**

Malaysia is one of the most remarkable **volcanic** regions in the world. Java and Sumatra are studded with volcanoes.

5. Java is the "pearl of the Indies." It contains a population of more than 25,000,000. Important exports are coffee, tobacco, rice, sugar, tea, and cinchona.

The islands of Banka and Billiton are famous for their tin mines.

6. Sumatra, Celebes, and the **Moluccas** are famed for their spices (nutmeg, mace, and cloves).

In Sumatra grows the largest flower in the world. Its cup is a yard in diameter, and holds two gallons of water. The plant is a parasite called *Rafflesia*. The chief exports are tobacco and black pepper.

There is regular steamship service between the Dutch colonies and the countries of Europe and Asia. A large part of the land is farmed under the direction of the government and the products are sold at auction in Amsterdam to Dutch merchants, who are the "middlemen" for the distribution of colonial products. So it happens that we buy Java coffee, Sumatra tobacco, and Banka tin in Holland. We also buy there the sugar, gums, and spices grown in the Dutch colonies. Our sales to Holland for export to the colonies are mainly kerosene and machinery.

7. Borneo is the largest island in the world except Papua.

Hulling coffee in Java

It exports timber, gutta-percha, cocoanuts, and tobacco. Among its curiosities is the flying frog.

8. The Philippines. (For a description see p. 82.)

9. Melanesia comprises Papua, or New Guinea, and a chain of islands extending to and including New Caledonia.

It derives its name, *Melanesia*, or **Black Islands,** from black tribes called Papuans. They are savages.

New Guinea has been *divided* by treaty among three na

In the Solomon Islands.

Part is owned by the Netherlands, part by Great Britain, and by Germany. The Dutch have the largest share.

The English are actively developing the resources of their part are Christianizing and civilizing the natives.

German New Guinea, **Kaiser Wilhelm's Land,** has fertile soi suited to tobacco. Much of the land is adapted for grazing the forests furnish valuable timber.

A curious bird found in New Guinea is the **bird of paradise.**

New Caledonia, a mountainous island east of Australia, belo France, and, with the neighboring **Loyalty Islands,** it is use convict colony. The island is famous for its metallic ores—n tin, mercury, copper, and platinum being found.

10. Polynesia.—Eastward of Melanesia lies **Polynesia,** c Many Islands. These dot the Pacific through the space of a million square miles. The northwestern division of Polynesia is sometimes called **Micronesia,** or the Little Islands.

The Polynesians are Malays.

The traveler's palm. This tree grows in many countries. When cut into, it yields several quarts

The bread-fruit, yam, and cocoanut are their chief **food plants.** The sweet-scented sandalwood, which the Chinese burn as incense in pagodas, and **copra,** the dried kernel of the cocoanut, are exported.

Samoa is a volcanic group about 13° south of the equator, not far from the center of the Pacific Ocean, a the region of the southeast trade-wind. From December to A has a wet season, with a rainfall, in some years, amounting inches.

The **natives** are Malays—intelligent but indolent. They have converted to Christianity. From the skill with which they m their canoes amid the surf, the islands have been called the "I the Navigators."

Savaii and **Upolu** belong to Germany; Tutuila and Manua United States.

11. Hawaii. (For description, see p. 82.)

Review Topics—Describe Oceania. Two kinds of islands. The polyp. Coral reefs. Malaysia. For what remarkable? Java. Sumatra. C The Moluccas. Borneo. Melanesia. The natives. New Guinea. New Cal Polynesia. Micronesia. Products. Samoa.

GENERAL REVIEW.

I. Form.—Of what form is the earth? Was its real form always known? Columbus thought he could reach India by sailing west from Europe, was he right? What expedition proved that the earth is round? How do eclipses of the moon prove it even better?

What is the difference between the polar diameter of the earth and the equatorial? Between the polar and equatorial circumferences? What do these differences show about the exact figure of the earth? What is the area of the earth?

How is position indicated on the surface of the earth? Are the degrees of latitude between 0° and 10° and between 60° and 70° equal each to each? Are all degrees of longitude equal each to each? How long in miles is a degree of longitude at the equator? Where is the point which has 0° latitude and 0° longitude?

II. Motions.—What are the motions of the earth? What is the rate at which a point on the equator rotates? How are day and night caused? Explain difference of time. Compare as to time Liverpool, New York, San Francisco.

What determines the length of the year? Explain the changes of the seasons. The inequality of day and night. The equinoxes. The solstices.

III. Zones.—What does zone mean? Describe the division of the earth's surface into zones. How far are the tropics from the equator? Why just so far? Why are the polar circles 23½° from the poles? Describe the sun's apparent annual journey. State its real meaning. Where does Christmas occur at midsummer? Explain why.

IV. Divisions of Surface.—Which is greater, the land or the water-surface of the earth? Is the water surface waste? What are its great uses?

By what line is the earth as shown on maps divided into hemispheres? What continents are in the Eastern hemisphere? In the Western?

By what line is the earth divided into Northern and Southern hemispheres?

Which continents are mostly in the Southern hemisphere? Which one is entirely within that hemisphere?

Which alone of the continents is really a separate body of land? How are North and South America connected? Asia and Africa? What forms the boundary between Europe and Asia?

In what ocean do we find the greatest number of islands? Name some of the most important islands and island groups of the world.

Of which continents are the coast-lines the most indented? Of which is the coast-line the most regular? What is the value of coast indentations?

Define an ocean. Name the oceans. Where is each? Are they really separated? What are the world's great inland seas? Have they any special value? What is the Gulf Stream? The Japan Stream? Describe the course of each. The effect of each upon the continent toward which it flows.

V. Relief.—What and where are the great mountain systems of North America? South America? Europe? Asia? Africa? In what directions do these systems lie? Name some of the highest mountains and their altitude.

What is a volcano? What and where are some of the most noted?

What plateau regions do you find in North America? In South America? How would you describe Africa as regards relief? What plateau region in Southwestern Europe?

Name the great plain regions of North America. Of South America. Europe. Asia. Name some of the noted valleys of the world.

VI. Drainage.—Explain how the drainage of the world is effected. Name and locate the great rivers of North America. South America. Europe. Asia. Africa. Australia. What beside drainage are the offices of rivers?

Define a lake. Name and locate the great lakes of North America. Africa. The lakes of Europe. Asia. South America. Australia. Name some salt lakes. Why are they salt?

VII. Climate.—Define climate. What is rain? Its source? Explain evaporation and condensation. What zone has the greatest rainfall? What region? What regions the least? Explain winds. Their effect upon rainfall. Give illustrations. Explain the effect of mountains upon rainfall. Give illustrations. What effect has elevation upon climate? Nearness to the sea? Illustrate.

VIII. Vegetation.—Where do you find the densest and most luxuriant vegetation? The most scanty? Name some of the timber trees of North America. The great lumber regions of the continent. For what kinds of wood is Central America noted? What forest products come from South America? Where is the great forest region of Northern Asia? What valuable kinds of timber in Southern Asia? Where are the lands of the bamboo and palm-trees? Name some of the forest trees of Europe. Of Africa. Of Australia. How are Australian trees peculiar? What countries of Europe have noted lumber regions?

Where does sugar-cane flourish? What other sugar-plant is cultivated? Whence come our great supplies of sugar?

Name some of the great sources of oranges, lemons, bananas, apples, grapes. What are the wine-making parts of the United States? Of Europe? Africa?

Whence comes the tea supply of the world? That of coffee? Of cocoa?

What are the great food plants of the world? The most important? What are the chief wheat-growing regions of North America? Where in South America is wheat largely raised? What are the great wheat-growing countries of Europe? What country in Asia is noted for its wheat? What part of Asia is destined to become a large producer of wheat? Where is rye a staple food? What part of the world produces the largest yield of corn? What countries are famed for their rice crop? What parts of the United States? What nations use rice as their chief food? In what regions do potatoes flourish? Where is millet the chief food of the people? Where is breadfruit indigenous? The taro? What fruit is largely the food of the Arab? Where is the banana a great food plant?

What island yields the most famous tobacco in the world? What parts of the United States are noted for their tobacco? What islands in the Pacific? Where are the great opium-raising regions? Who are the great consumers of opium? Where is the coca plant cultivated? What is the effect of its leaf?

What plants supply fibre for making clothing? What are the great cotton-growing regions of the world? What countries are famed for their linen? What plants yield fibre for cordage? Where are they grown?

What continent is famed for its "air-plants"? Whence come cinnamon? Clover? Pepper? Ginger? Camphor? Rubber? Gutta-percha? Attar of roses?

IX. Animal Life of the World.—In what zone are the largest and fiercest wild animals found? Name some of the wild animals of North America. Of your own State. The domestic animals of North America. What parts of the United States are famed for cattle-raising? For sheep? Hogs? Name some of the animals of South America. What are the cattle-raising regions of this continent? Name some of the wild animals of Europe. Of the domestic. The animals of Africa. Of Australia.

What are the great wool-growing regions of the world? Which of our States are famed for wool? Name the silk-producing countries of Asia. Of Europe. The great fur-bearing regions in North America. In Asia. The most noted seal fisheries.

Where are the great fishing grounds of North America? Where is whale fishing carried on? Where are the great fishing grounds of Europe? Where are sponges obtained? Pearls?

X. Population.—About how large is the population of the globe? In what zones and on what continents are most of the people? What is the population of North America? How distributed? Is any part of South America densely settled? How large is the population of Europe? Asia? Africa? Australia?

Describe the appearance of the different races of men. Where do you find each?

XI. Civilization.—What do we mean by the term civilized? Compare the races in this respect. Where do you find savages and barbarous people? Civilized? Enlightened? Which is the most progressive nation of the Mongolians?

Describe the homes of an enlightened people. What tribes live in tents? Of what do the Eskimos build their huts? In what sort of dwelling do the Bushmen live? Of what do the Japanese and Philippine islanders make their houses? How did the natives on the coast of Venezuela originally build their houses? How do the natives of New Guinea? Where do many of the people live in boats?

What leads to the building of towns? What causes towns to grow into cities? What reasons can you give for the growth of New York? Chicago? San Francisco? New Orleans? St. Louis? Atlanta? Galveston? Buffalo? Kansas City? London? Glasgow? Hamburg? Vienna? Singapore?

XII. Religion.—What are the great religions of the world? Where do you find each?

XIII. Government.—Why is government necessary? What nations have the best forms? The poorest?

XIV. Education.—What is education? Describe the education of savages. Of the Chinese. Name countries in which education is compulsory. What countries have the best public instruction? Name some which have little or none. How do well-educated nations rank? Give illustrations of this. Of the reverse.

XV. Migration.—What causes lead to migration? Which is the most migratory race? What parts of the world have been settled by English colonists? Spanish? French? Dutch? What can you tell of the colonization of Africa now going on? Of English colonization in India? Of foreign intercourse with China? What has stimulated modern migration?

XVI. Industries.—Name regions in which the people have no occupation save that of securing food. How do such people rank? In what kinds of labor are the intelligent people of the world engaged? Which of these is the most important? What determine the occupations of a country or region? What are the great agricultural countries of the world? The leading manufacturing countries? The leaders in commerce? In fishing?

Which are the largest coal-producing countries? The greatest producers of silver? Gold? Tin? Copper? Emeralds? Diamonds? Salt?

TRADE AND NAVIGATION.

What is commerce? What was in early ages the great trade of the world? What nations gained control of the India trade after 1497? What caused this?

What means of transportation are employed in Central and South Africa, and why? What in the Sahara? What in carrying on the great tea and fur trade between Russia and China? What beasts of burden are used in the Andean States? How is trade carried on between India and Western Asia?

Goods are paid for among civilized nations with money, chiefly gold and silver. But in many parts of Africa the products of one region are traded for those of another. In Abyssinia small blocks of salt, and in many parts of India and of the African coasts small shells called *cowries*, have been used as money.

In what parts of the United States are cattle largely raised? In what parts of South America? Where are the most important fisheries for cod, herring, and mackerel? Salmon? The whale?

What parts of the Pacific coasts of North and South America are fa for wheat? What portion of Russia? Of North Africa? What gr abound in the central portions of North America? Where is rice ex sively raised? What are the great tea-growing regions? What impor article of consumption comes from Brazil? Which of the Dutch Indies is famed for its coffee? From what part of Arabia do we get best coffee? What are the great coffee ports? What one of the W Indies is noted for sugar? What part of the United States? What isl in the Pacific? To what port of the United States do these islands sugar? The shores of what great inland sea are famed for their fr What islands in the Western Hemisphere are also noted for their fr

What parts of the United States grow large quantities of wool? W parts of South America? What English colonies? What section o United States produces cotton? What portions of Asia? Africa? W countries are noted for flax? What is made of flax? What are the silk-growing countries of Asia? Of Europe? From what regions d get furs? Sealskins? Ostrich feathers?

ıat continent chiefly supplies us with ivory? What is the great ivory f the world? From what source do we get supplies of gum? Where get our chief supplies of India rubber? Of gutta-percha? Naval Jute? Hemp? Drugs? Peruvian bark? Tobacco? Opium?

ıat is the great manufacturing region of the New World? Of d?

ıat cargo would a ship be likely to carry from Shanghai to New From Bombay to Liverpool? From Odessa to London? From San isco to London? From Rio to New York? Montevideo or Buenos to Liverpool? From the Guinea Coast to Liverpool? Havana to ork? New York to Liverpool? New Orleans to Liverpool?

ıat enables sailing vessels to venture out of sight of land? The equired to cross the ocean has been shortened by voyagers availing elves of the winds and currents of the sea.

ıat is the general direction of the winds in the northern half of the Zone? What in the southern half? What in the North Temperate Zone? In the South Temperate Zone? What striking exception to this system do you find in the Indian Ocean and China Seas?

What is the best route from New York to Liverpool? How would a vessel make the quickest return passage?

By what route does tea pass from China to Russia? From China to New York? Formerly it was brought by steamers through the Red Sea and Suez Canal, but now most of it is brought across the Pacific to San Franciscó or Vancouver and thence by railroad. Compare these routes in length. The old route was around Cape Horn, and thence through the Atlantic. What is the shortest route from Liverpool to Bombay? By what other route may vessels go? At what points do the steamers touch that ply between San Francisco and Sydney? What are the two routes between Sydney and Liverpool? When the canal is cut across the Isthmus of Panama, it will shorten the water route from New York to San Francisco about 10,000 miles, and would make an almost straight course between England and Australia, and between the Pacific shores of South America and the Atlantic ports of the United States.

GEOGRAPHICAL AND STATISTICAL TABLES.

DIMENSIONS OF THE EARTH.

Polar Diameter	7,899 miles.
Equatorial Diameter	7,925 "
Equatorial Circumference	24,899 "
Superficial Area	196,861,750 square miles.

HEIGHTS OF PRINCIPAL MOUNTAINS.

		Feet.
North America.		
Mount McKinley,	Alaska	20,464
Mount Logan,	Canada	19,500
Orizaba,	Mexico	18,314
Mount St. Elias,	Alaska	18,010
Popocatepetl,	Mexico	17,784
Mount Wrangell,	Alaska	17,500
Mount Brown,	Canada	16,000
Mount Whitney,	California	14,898
Mount Rainier,	Washington	14,526
Mount Shasta,	California	14,350
Rocky Mountains (average),		10,000
Sierra Nevada, "		9,000
Mount Mitchell,	North Carolina	6,711
Mount Washington,	New Hampshire	6,286
Appalachian Mountains (aver.),		2,500
South America.		
Aconcagua,	Chile	23,082
Sahama,	Bolivia	22,350
Gualatirri,	Chile	22,000
Sorata,	Bolivia	21,286
Illimani	"	21,149
Chimborazo,	Ecuador	20,517
Arequipa,	Peru	18,500
Tolima,	Colombia	18,321
Andes Mountains (average),		13,000
Europe.		
Elburz,	Caucasus Mountains	18,572
Kasbek,	" "	16,545
Mont Blanc	Alps	15,784
Monte Rosa,	"	15,223
Matterhorn,	"	14,780
Finsteraar-horn,	"	14,080
Jungfrau,	"	13,718
Maladetta,	Pyrenees	11,200
Mount Etna (volcano),	Sicily	10,874
Mount Olympus,	Greece	9,745
Mount Vesuvius (volcano),	Italy	3,948
Africa.		
Kilimanjaro,	Central Africa	20,000
Kenia,	" "	18,000
Ruwenzori,	" "	17,000
Teneriffe,	Canary Islands	12,182
Atlas Mountains (highest),		11,400
Asia.		
Everest,	Himalaya Mountains	29,000
Dapsang,	Karakoram Mountains	28,300
Kanchinginga,	Himalaya Mountains	28,156
Dhawalagiri,	" "	28,000
Hindu Kush Mountains		20,000
Demavend,	Elburz Mountains	18,489
Ararat,	Armenia	17,260
Fujiyama,	Japan	14,000

LENGTH OF PRINCIPAL RIVERS, AND AREA OF RIVER-BASINS.

Name.	Length.	Area of Basin.
	Eng. Miles.	Square Miles.
North America.		
Mississippi (entire)	4,300	1,244,000
Mackenzie	2,300	448,000
St. Lawrence	2,200	335,515
Saskatchewan	1,732	432,000
Yukon	2,000	200,000
Arkansas	2,000	189,000
Rio Grande	1,800	240,000
Red	1,600	97,000
Columbia	1,400	298,000
Colorado	1,000	257,000
Ohio	950	214,000
Brazos	950	34,000
Tennessee	800	41,000
South America.		
Amazon	3,750	2,510,000
La Plata (Parana)	2,500	1,242,000
Orinoco	1,600	340,000
Madeira	2,000	
San Francisco	1,200	250,000
Europe.		
Volga	2,300	400,000
Danube	2,000	269,180
Dnieper	1,220	242,000
Don	1,325	170,000
Rhine	960	65,280
Asia.	Eng. Miles.	Square Miles.
Yenesei	3,400	1,000,000
Yangtze	3,320	547,800
Ob	3,000	924,800
Amur	2,650	786,000
Lena	2,400	800,000
Brahmaputra	2,300	450,000
Indus	2,000	312,000
Euphrates	1,780	250,000
Ganges	1,960	432,480
Irawadi	1,200	331,200
Africa.		
Nile	4,100	1,425,000
Kongo	3,000	1,500,000
Niger	3,000	800,000
Zambezi	1,800	900,000
Australia.		
Murray	1,500	500,000

AREA AND POPULATION OF THE WORLD.

	Area in sq. miles.	Population.
North America	7,952,386	106,162,000
South America	6,844,602	38,391,000
Europe	3,797,410	397,003,000
Asia	17,039,066	911,202,000
Africa	11,518,104	155,653,000
Australasia and Oceania	3,458,029	6,256,000
Polar Islands	1,689,834	12,000
Total	52,299,431	1,614,682,000

PRINCIPAL RELIGIONS OF THE WORLD (1892).

Christians	477,088,158
Jews	7,056,000
Mohammedans	176,834,373
Buddhists and other Asiatic Religions	460,900,000
Brahmans	190,000,000
Pagans	117,681,669

POPULATION OF FOREIGN TOWNS AND CITIES.

(From the most recent foreign authorities.)

NORTH AMERICA.

British America (1901).

Montreal, Queb.	267,730
Toronto, Ont.	208,040
Quebec, Queb.	68,840
Ottawa, Ont.	59,928
Hamilton, Ont.	52,634
Winnipeg, Win.	42,340
Halifax, N. S.	40,832
St. John, N. F.	40,711

Mexico (1900).

Mexico	344,721
Guadalajara	101,208
Puebla	93,521
Leon	63,263
Monterey	62,266
San Luis Potosi	61,019

Central America.

N. Guatemala ('04)	96,560
San Salvador ('01)	59,540
Leon ('00)	45,000
Tegucigalpa ('01)	34,692

West Indies.

Havana ('02)	275,000
Port-au-Prince ('03)	70,000
Kingston (est.)	55,000
Santiago ('02)	43,090
Matanzas ('02)	36,374
Bridgetown (est.)	35,000
San Juan ('99)	32,048
Ponce ('99)	27,956

SOUTH AMERICA.

Brazil.

Rio Janeiro ('00)	750,000
Bahia ('90)	174,412
Pernambuco ('90)	111,556
San Paulo ('90)	64,934

Guiana.

Georgetown ('91)	53,176
Paramaribo ('02)	32,219
Cayenne ('01)	12,612

Venezuela (1894).

Caracas	72,429
Valencia	38,654
Maracaibo	34,284

Colombia (1902).

Bogota	120,000
Medellin	53,000
Barranquilla	40,000

Ecuador (1900).

Quito	80,000
Guayaquil	51,000

Peru (1903).

Lima	130,000
Arequipa (est.)	40,000
Callao (est.)	20,000

Bolivia (1900).

La Paz	60,000
Cochabamba	21,886
Sucré	20,900

Chile (1901, estimated).

Santiago	296,695
Valparaiso	132,941

Argentina.

Buenos Aires ('04)	908,492
Rosario ('03)	122,156
La Plata ('03)	75,023

Paraguay (1900).

Asuncion	51,700

Uruguay (1902).

Montevideo	276,034

EUROPE.

United Kingdom (1904).

London (greater)	6,907,756
Glasgow	798,357
Liverpool	723,430
Manchester	557,938
Birmingham	537,965
Leeds	450,142
Sheffield ('01)	432,940
Belfast	349,180
Bristol	343,204
Edinburgh	316,479
Dublin ('01)	290,638
West Ham	288,424
Bradford	285,089
Kingston-on-Hull	253,865
Nottingham	248,811
Salford	228,983
Newcastle	225,362
Leicester	224,186
Portsmouth	198,038
Cardiff	176,313
Bolton	175,744
Dundee	160,871

Germany (1900).

Berlin	1,888,848
Hamburg	705,738
Munich	499,932
Leipsic	456,134
Breslau	422,709
Dresden	396,146
Cologne	372,529
Frankfort-on-Main	288,989
Nuremberg	261,081
Hanover	235,649
Magdeburg	229,667
Dusseldorf	213,711
Stettin	210,702
Chemnitz	206,913
Königsberg	189,483
Charlottenburg	189,305
Stuttgart	176,699
Bremen	163,297

France (1901).

Paris	2,714,068
Marseilles	491,161
Lyons	459,099
Bordeaux	257,638
Lille	210,696
Toulouse	149,841
St. Etienne	146,559
Roubaix	142,365
Nantes	132,990
Havre	130,196
Rouen	116,316
Rheims	108,385

Spain (1900).

Madrid	539,835
Barcelona	533,000
Valencia	213,530
Seville	148,315
Malaga	130,109
Murcia	111,539
Carthagena	99,871

Italy (1901).

Naples	563,540
Milan	491,460
Rome	462,783
Turin	335,656
Palermo	309,694
Genoa	234,710
Florence	205,589
Bologna	152,009
Venice	151,840
Messina	149,778

Russia (1897).

St. Petersburg	1,313,300
Moscow	1,092,360
Warsaw	756,426
Odessa	449,673
Lodz	351,570
Kief	319,000
Riga	256,197
Kharkof	197,405

Sweden (1903).

Stockholm	311,043
Gothenburg	131,000

Norway (1900).

Christiania	227,626
Bergen	72,251

Austria-Hungary (1900).

Vienna	1,674,957
Budapest	732,322
Prague	201,589
Lemberg	159,877
Gratz	138,080
Trieste	134,143

Netherlands (1903).

Amsterdam	546,534
Rotterdam	357,474
The Hague	229,839
Utrecht	110,648

Belgium (1902).

Brussels	586,936
Antwerp	286,695
Liege	166,105
Ghent	162,925

Switzerland (1904).

Zürich	160,410
Basle	120,897
Geneva	110,954
Berne	68,958

Portugal (1900).

Lisbon	356,009
Oporto	167,953

Denmark (1901).

Copenhagen	378,235

Turkey (estimated).

Constantinople	1,125,000
Saloniki	105,000

Greece (1896).

Athens	111,486
Piræus	42,169
Patras	37,958

Roumania (1899).

Bucharest	276,178
Jassy	77,759
Galatz	62,545

Servia (1902).

Belgrade	69,769

ASIA.

China (estimated).

Pekin	1,000,000
Canton	880,000
Hankau	870,000
Tientsin	750,000
Hang-Chau	700,000
Fuchau	624,000
Shanghai	620,000
Hong Kong ('01)	283,905
Suchau	500,000
Chung-King	350,000
Ningpo	260,000
Nankin	250,000

British India (1901).

Calcutta	1,026,987
Bombay	776,006
Madras	509,346
Haidarabad	448,466
Lucknow	264,049
Rangoon	234,881
Benares	209,331
Delhi	208,575
Lahore	202,964
Cawnpur	197,170
Agra	188,022

Ceylon (1901).

Colombo	158,228

Japan (1903).

Tokyo	1,818,655
Osaka	995,945
Kyoto	380,568
Yokohama	326,035

Indo-China.

Bangkok, Siam (est.)	400,000
Singapore (Brit.) ('01)	228,555
Hanoi (French) ('02)	150,000

Afghanistan (estimated).

Kabul	100,000
Kandahar	50,000

Persia (estimated).

Teheran	280,000
Tabriz	200,000
Ispahan	70,000

Arabia (estimated).

Mecca	60,000
Medina	48,000
Muscat	40,000

Asiatic Turkey (estimated).

Damascus	225,000
Smyrna	201,000
Bagdad	145,000
Aleppo	127,000
Beirut	119,000
Brusa	76,000
Jerusalem	42,000

Asiatic Russia (1897).

Baku	179,133
Tiflis	160,645
Tashkend	156,414
Kokan	86,704
Yekaterinodar	65,697
Tomsk	63,533
Samarkand	58,194
Irkutsk	49,106
Vladivostok	38,000

East Indies.

Manila ('04)	219,941
Surabaya ('01)	146,944
Batavia ('01)	115,887

AFRICA.

Cairo ('97)	570,062
Alexandria ('90)	319,766
Tunis ('01)	170,000
Fez (est.)	140,000
Algiers ('01)	96,542
Oran ('01)	87,801
Cape Town ('04)	77,183

AUSTRALIA (1903).

Melbourne	501,482
Sydney	481,890
Adelaide	186,006
Brisbane	124,462
Auckland	67,226
Hobart	24,655

ıny references have been made to these tables in the preced- essons, and you have become accustomed to using them; great deal more may be learned from a more careful study em. A noted German author has said that "figures show how the world is governed." Whether this is true or not, it is certainly true that figures show how the commerce of the world is carried on. The questions which follow are suggestive of some things that these figures teach.

TABLE III.*

ING EXPORTS OF THE UNITED STATES, 1903-1904.	VALUES.	LEADING COUNTRIES TO WHICH SENT.	LEADING PORTS AND DISTRICTS FROM WHICH SENT.
otton	$372,049,264	Great Britain, Germany, France, Italy, Spain, Japan	Galveston, New Orleans, Savannah, New York.
actured Cotton (cloth, yarn, clothing)	22,403,713	China, Canada, West Indies	New York, North and South Dakota, Boston.
nd Dairy Products	176,027,586	Great Britain, Germany, France, Belgium	New York, Boston, Baltimore, Philadelphia.
tuffs (grain, flour, meal)	149,050,378	Great Britain, Germany, France, Belgium, Holland	New York, Baltimore, Galveston, New Orleans.
d Steel Goods (machinery, engines, hardware)	111,948,586	Great Britain, Germany, Mexico, Canada	New York, Buffalo, Cuyahoga, Detroit.
um (kerosene, crude and other oils)	79,060,469	Great Britain, Germany, Holland, Belgium	New York, Philadelphia, Delaware, Baltimore.
r, Lumber, Furniture, etc	65,428,417	Great Britain, Germany, Canada, West Indies	New York, Pensacola, New Orleans.
(bars, plates, and manufactured)	57,142,081	Great Britain, Germany, France, Holland	New York, Baltimore, Philadelphia.
nimals (90% cattle)	47,977,875	Great Britain, Cuba	New York, Boston, Baltimore, Philadelphia.
o (leaf and manufactured)	34,683,531	Great Britain, Germany, Italy, France	New York, Baltimore, New Orleans.
r and Manufactures of	33,980,615	Great Britain, Australasia, Canada	New York, Boston.
id Coke	30,043,556	Canada, Mexico, Cuba	Buffalo, Cuyahoga, Niagara, Oswego.
ltural Implements	22,749,635	France, Canada, Russia, Argentine, Germ'y, Gt. Britain	New York, N. and S. Dakota, New Orleans.
and Nuts	20,678,665	Great Britain, Germany, Canada, France	New York, San Francisco.
Seed Products (oil-cake, meal)	19,992,542	Great Britain, Germany, Netherlands, France, Belgium	New Orleans, Galveston.
Stores (tar, rosin, turpentine)	16,145,222	Great Britain, Belgium, Germany, Netherlands	Fernandina, Savannah.
als, Drugs, and Dyes	14,480,323	Great Britain, Mexico, Canada, Germany, Italy	New York, Boston, San Francisco.
id Vehicles	10,936,618	Great Britain, Mexico, Canada, West Indies, Japan	New York, El Paso, Detroit.
ers	150,399,941		
tal Exports	$1,435,179,017		
tal Imports	991,087,371		
lance of Trade in favor of United States	$444,091,646		

ne our largest export. Why is more cotton shipped through the of Galveston and New Orleans than through New York? Why is Britain (a small country) so large a purchaser of our goods? What ies buy our manufactured cotton? What do you know of the in- s of these countries? What can you say of the industries of those countries that buy our agricultural implements? What is exported from Fernandina? From Buffalo? From Savannah? Why? Why are more goods exported from New York than from other ports? Select countries that are the largest buyers of foods? Why is this? What countries buy our raw materials? Why? What countries buy our manufactures? Why?

TABLE IV.

ADING IMPORTS OF UNITED STATES, 1903-1904.	VALUE.	LEADING COUNTRIES FROM WHICH OBTAINED.	LEADING PORTS AND DISTRICTS AT WHICH ENTERED.
igar	$71,915,753	Cuba, Java, Hawaiian Islands, Germany	New York, Philadelphia, New Orleans, Boston.
	69,551,799	Brazil, Colombia, Venezuela, Guatemala, Mexico	New York, New Orleans, San Francisco, Baltimore.
als, Drugs, and Dyes	65,294,558	Chile, Germany, Great Britain, India	New York, Philadelphia, San Francisco, Boston.
iber (hemp, flax, jute, grasses)	37,814,285	Mexico, Philippines, India	New York, Boston, New Orleans, Mobile.
ictured Fiber (linens, cordage, bagging, etc.)	40,308,837	Great Britain, Germany, Belgium, France	New York, Boston, New Orleans, Philadelphia.
otton	9,387,331	Egypt, Peru	Boston, New York.
otton (cloth, clothing, knit goods, laces, etc.)	49,524,246	Great Britain, Germany, Switzerland, France	New York, Chicago, Boston.
lk	46,100,500	Japan, China, Italy, France	Oswegatchie, San Francisco, New York, Puget Sound.
ictured Silk (cloth, ribbons, velvets, etc.)	31,973,680	France, Germany, Japan, Switzerland	New York, Philadelphia.
of Cattle and Goatskins	52,006,970	India, Argentina, Russia, France	New York, Boston, Philadelphia.
Rubber and Gutta Percha (raw)	41,049,434	Brazil, Congo State, East Indies, African Colonies	New York, Boston.
Wool and Hair of Goat, Alpaca, etc	24,813,591	Australasia, Argentina, Russia, Turkey	Boston, New York, Philadelphia.
ictured Wool (cloth, carpets, clothing, etc.)	17,733,788	Great Britain, France, Germany	New York, Boston, Philadelphia.
Iron and Steel (ore, pig iron, bars, etc.)	17,688,131	Great Britain, Germany, Belgium, Sweden	Baltimore, Philadelphia.
ron and Steel (cutlery, machinery, etc.)	10,933,460	Great Britain, Germany, Belgium	New York, Boston, Philadelphia.
and Precious Stones	25,012,940	Great Britain, Netherlands, France, Belgium	New York.
and Nuts	24,435,854	Italy, Central America, West Indies, Spain	New York, New Orleans, Boston, Mobile.
obacco	16,939,487	Cuba, Sumatra, Germany, Turkey	New York, Tampa, Philadelphia, Chicago.
and Cigarettes	3,133,859	Cuba, Egypt, Mexico	New York, San Francisco, Boston.
manufactured)	21,486,311	Straits Settlements, Malay States, Dutch East Indies	New York, San Francisco, Philadelphia, Boston.
timber and lumber)	20,489,432	Canada, Central America, East Indies	New York, Champlain, Oswegatchie, Huron.
furniture and pulp)	6,494,921	Canada, Germany, Norway	New York, Boston.
	18,229,310	Japan, China, British India	New York, Chicago, San Francisco, Boston.
(unmanufactured)	18,179,513	Mexico, Canada, Great Britain	Arizona, Perth Amboy, Baltimore, New York.
Wines, and Malt Liquors	16,662,702	France, Germany, Great Britain, Spain	New York, Boston, San Francisco.
kins and clothing)	14,763,002	Great Britain, Germany, France, Belgium	New York.
and Leather Goods (gloves)	11,100,215	Great Britain, Germany, France	New York, Boston.
ers	208,064,362		
tal Imports	$991,087,371		

ere is raw sugar refined (Index)? What kind of sugar do et from each country named? About how much is the per person of our sugar import? Of the coffee import? kind of raw fiber do we get from each country named? are the industries of these countries with those of the coun- where we buy manufactured fiber. What use have we for otton of Egypt and Peru? What port receives wool otton, and why? Why is India a large exporter of hides? manism (LXIX) forbids the use of any part of a dead animal.) What is the location of the countries supplying rubber? Where are rubber goods made (see Index)? Compare our export of tobacco with our import. Make similar comparisons in regard to leather, steel, fruits and copper. Explain why these articles are both imports and exports. Notice that some articles are imported as raw materials and exported as manufactured goods; others, like fruits and tobacco, differ in kind; still other goods are imported because of convenience. Canadian coal, for example, is nearer to some parts of our country than the home supply.

* For Tables I and II, see p. x.

TABLE V.

Name of Port and Customs District.	Value of Exports.	Value of Imports.	Total Trade.	Ships Entering and Leaving.	Tonnage.	American.	Foreign.
New York	$506,808,013	$600,071,033	$1,106,879,046	7,272	17,936,114	2,414,240	15,521,874
New Orleans	148,595,103	34,036,516	182,631,619	1,903	3,064,909	287,080	2,777,829
Boston	89,845,772	80,657,697	170,503,469	2,783	4,963,348	402,227	4,561,121
Galveston	145,316,457	1,847,646	147,164,103	821	1,786,733	25,043	1,761,690
Philadelphia	71,393,254	53,890,106	125,283,360	1,919	3,440,296	166,171	3,274,125
Baltimore	82,836,164	20,345,788	103,181,952	1,326	2,526,987	139,988	2,386,999
San Francisco	32,547,181	37,542,978	70,090,159	981	1,890,894	753,605	1,137,289
134 Other Districts	383,486,327	162,695,605	546,181,034	46,442	24,438,704	9,132,193	15,226,511
Totals	$1,460,827,271	$991,087,371	$2,451,914,742	63,447	59,967,985	13,320,547	46,647,438

Ports of Entry.—The foreign trade of a country is carried on through certain seaports designated by the government as "Ports of Entry." Such a port with the neighboring territory is known as a "Customs District." It contains a custom house with a corps of officers who inspect all goods entering the port from foreign countries and collect the duty as fixed by the tariff laws. Each lot of imported goods is accompanied by an invoice, or list, which has been inspected and signed by our consul at the foreign port from which the goods were shipped, and by a bill of lading signed by the transportation company which receives them from the exporter. It is the duty of the customs inspector to see that the goods delivered to the importer are the same in amount and value as those described in the invoice. When such is the case the merchant may call at the custom house, pay the duty, and receive his goods.

For the convenience of importers who do not wish their goods at once, or who live in inland towns, goods are stored in "bonded" warehouses or shipped "in bond" to the port of entry nearest the importer, who in either case must pay all expense of carriage besides the duty. The importance of a port of entry is measured by the value of the goods exported and imported, or by the number and tonnage (carrying capacity) of the ships entering and leaving during the year. Table V shows the rank of our chief seaports during the year ending June 30, 1904.

QUESTIONS ON TABLE V.

What part of our exports goes through the port of New York? What part of our imports? Why does New York have so large a share of the foreign trade? Compare the exports of New Orleans and Galveston with their imports. Why are the former so much larger? Name products that could be most cheaply exported by way of Boston. Galveston. Philadelphia. San Francisco. Which port has the largest percentage of foreign vessels? Of American vessels? Find out what part of our trade is carried in foreign ships. Which three ports receive the most foreign goods? Can you give a reason for this? Are they large cities? Are they good distributing points? Have they great capital to carry on extensive business? How can the business of a seaport be increased? The business of New Orleans has been increased by improved navigation on the Mississippi and the lowering of railroad freight rates from the grain and meat producing regions. How does this help the producer?

TABLE VI.

Density of Population and Trade of the Principal Countries.

Countries.	Population per square mile.	Foreign Commerce.		Commerce with the United States.	
		Imports.	Exports.	Imports from United States.	Exports to United States.
		Dollars.	*Dollars.*	*Dollars.*	*Dollars.*
Argentina	4.22	126,614,000	213,250,000	14,271,777	9,297,456
Australasia:					
Commonwealth	1.27	203,644,000	213,713,000	28,101,784	13,845,000
New Zealand	7.52	55,121,000	66,403,000		
Austria-Hungary	188.14	381,054,000	432,345,000	7,893,753	10,697,28
Belgium	588.59	512,679,000	407,295,000	45,853,856	24,072,64
Bolivia	2.58	5,587,000	11,076,000	76,926	1,73
Brazil	4.45	120,747,000	180,219,000	10,486,755	69,636,4
Canada	1.79	243,590,000	177,833,000	131,234,985	51,552,7
Chile	10.90	48,336,000	67,846,000	3,753,222	7,160,7
China	265.76	217,607,000	138,472,000	14,970,138	24,985,5
Colombia	7.92	10,695,000	18,487,000	2,923,404	4,810,
Cuba	36.58	58,826,000	77,849,000	21,761,638	62,942,
Denmark	160.48	119,180,000	94,470,000	14,411,599	686,
Ecuador	10.38	7,029,000	8,811,000	1,347,850	1,823,
Egypt	25.36	82,811,000	96,584,000	744,260	9,052,
France	188.17	926,632,000	820,685,000	88,690,130	80,083,
German Empire	280.36	1,428,640,000	1,193,483,000	224,562,019	122,272
India, British	166.62	278,054,000	409,535,000	4,866,683	51,831
Italy	293.50	359,358,000	292,867,000	36,041,878	33,655,
Japan	310.60	157,933,000	142,414,000	20,874,887	45,51
Mexico	17.65	74,690,000	83,366,000	43,124,985	71,11
Netherlands	425.61	912,376,000	781,750,000	72,961,060	20,86
Dutch East Indies	48.53	72,545,000	95,102,000	1,597,299	14,21
Peru	6.46	18,412,000	18,774,000	3,471,135	3,26
Portugal	150.65	60,044,000	30,710,000	2,915,897	3,22
Roumania	116.63	52,095,000	68,637,000	202,735	11
Russia	16.28	308,563,000	443,066,000	14,313,501	7,837,844
Spain	95.58	185,632,000	178,651,000	18,297,940	8,750,729
Sweden and Norway	24.15	220,021,000	225,188,000	10,435,944	5,370,071
Switzerland	210.07	230,860,000	171,485,000	413,748	21,155,994
Turkey	22.36	107,873,000	68,821,000	562,956	6,694,007
United Kingdom	345.73	2,640,564,000	1,415,179,000	543,766,877	176,723,465
United States	26.56	991,087,000	1,435,179,000		
Philippine Islands	66.00	33,221,000	30,251,000	4,832,900	12,066,934
Uruguay	13.28	25,958,000	38,587,000	1,901,651	2,573,431
Venezuela	4.12	8,560,000	14,900,000	2,736,726	6,609,919
Other countries		837,672,000	611,829,000	70,948,293	35,917,301
All countries		12,126,943,000	10,720,551,000	1,465,584,391	1,023,282,832

QUESTIONS ON TABLE VI.

What countries have a sparse population? What are the leading industries in these countries? What kind of goods do they buy of us? Sell to us? Compare the imports of thickly settled countries with those of thinly settled countries. Why are the former greater? What kinds of goods does each import? Find countries whose imports exceed their exports; find other countries whose exports exceed their imports; compare these countries as to population, industries and wealth. How can you explain the small import of Bolivia and Switzerland from the United States? What countries have a balance of trade against them? (Refer to Fig. 21 and see how these countries rank in shipping.) Which countries have large balances in their favor? Are such countries richest? Which five countries sell us the most goods? What are these goods (Table IV)? Which five buy the most of us? Of what do their purchases consist? Compare our trade with Russia with that which we have with Germany. How is the difference in amount explained?

Compare Turkey's imports with her exports. Why does this explain her large debt? Why is not Switzerland a bankrupt nation since there is a large balance of trade against her? Compare our trade with the countries most distant from us. With that of those nearest to us. How does distance affect trade? Why has Great Britain a larger trade with these distant countries than the United States? What part of the imports of Germany, Great Britain, France, Netherlands, and Belgium come from the United States? What part of their exports do we buy? What do we buy of Mexico? Why is our trade with Russia so small? Why is our import from Australia and Argentina so large? Compare these imports with those from Belgium.

INDEX—PRONUNCIATIONS.

KEY TO PRONUNCIATION—VOWELS: ā in āle; â in senâte; ă in ăm; â in câre; ä in ärm; å in åsk; ą in ąll; au in author. ē in ēve; ĕ in ĕnd; ē in fērn; ę in they. ī in īce; ĭ in ĭll; ï in pïque. ō in ōld; ŏ in ŏdd; ô in ôr; ọ in dọ; ȯ in sȯn. ū in ūse; ŭ in ŭp; û in ûrn; ụ in rụde; u in full; ua = wa; ue = we. ȳ in bȳ; ÿ in hÿmn. ou as in out; oi as in oil.

CONSONANTS: c or ċ as in can; ç as in çent (c as in can, if unmarked); ḡ as in ḡo; ġ as in ġem (g as in go, if unmarked); N = nasal n, as in Toulon (like ong); n̈ = ng; ñ like ny in barnyard. qu = kw. s as in so; ṣ = z; th as in this. Italic letters are silent. Short vowels are not usually marked.

Geographical names are divided into syllables and place of accent is marked; but for the sake of simplicity and ease of reading, diacritical marks are often omitted when not necessary to prevent error. All index numbers refer to pages.

LESSONS IN COMMERCIAL GEOGRAPHY.

To the Teacher.—The following paragraphs contain a review of those parts of the text that relate to production and trade, with enough new material to make each a complete lesson unit. The Roman numerals refer to lessons, the Arabic to paragraphs and pages. The index will be found especially helpful in finding material bearing on the lesson. Production and trade maps *made by the pupil* are the best means of teaching these subjects. Model maps are therefore given and material from which original maps may be made. The lessons provide for a year's course in commercial geography.

1. Production.—(Review XVII.) What things do all men need? How do men secure them? Name some of them that we secure by agriculture; such articles are called "agricultural products." Name some articles that we get by mining; they are called "mineral products." Name some articles that we get from forests; these are called "forest products." When agricultural, mineral, and forest products are made up into new forms we call these forms "manufactured" products. Name some of them and tell from what they were made.

Think of all the countries of the world that you have studied; visit the great stores of our cities, and you will see how great is the number and variety of things that men produce by labor and skill. You will also notice that the products of one country are often very different from those of another. Name some agricultural products that are not produced in the United States; some mineral products; some forest products; some manufactured products. Can you explain why each of these is not produced in this country?

Written Work.—Make a list of twenty-five articles produced in the United States; classify as agricultural, mineral, forest, or manufactured product and tell in what part of the country each is produced.

2. Commerce.—It takes many men to produce all the things that the world needs. No one man can produce all the things that he himself needs, and few men need all the things that they themselves can produce. So it happens that men sell the part of their own productions that they do not need and buy of other men the productions that they do need. This buying and selling of products is going on all over the world and it makes commerce, or trade.

Transportation (pp. 65, 68). The products which a man sells must be sent to places where they are needed. The products which he buys must be brought from places where they may be had. This carrying of products from one place to another is called "transportation."

Transportation is very important because without it there can be no commerce. A man would not buy coal in Pennsylvania, cotton in Texas, or iron in Alabama, unless he could transport these things to places where they can be used or sold. Those who carry goods for us must be paid. You will see then that what we pay for transportation makes goods cost more and that cheap transportation makes low prices and helps commerce.

In the parts of this book which we have completed we have learned the names and location of the different countries of the world; we have studied their mountains, rivers, and climates; we have learned also some things about the people of each country, their occupations, and the products of their labor.

We are now to make a special study of the products that we sell at home and to other countries, of those we buy at home and from other countries, and of their trade with one another. All this makes up the world's commerce. This study is called "Commercial Geography."

Written Work.—1. Write a paragraph on methods of transportation in use in different countries (see index under transportation). 2. Make a list of three classes of people engaged in production, three in trade, and three in transportation, and describe what each one does.

NORTH AMERICA.

3. North America ranks next Europe in the value of its productions and commerce. This is partly due to soil, climate, navigable rivers and good harbors, and partly to the genius and enterprise of its people.

(Review Map Studies, p. 18.) What natural wealth do you find in the Pacific Highland? In the Laurentian Highland? Along the Atlantic Coast? In the Great Central Plain? In the Coastal Plains? What is the climate of the northern part of the continent? Of the southern part? Of the central part? Which part is most productive? Give reasons. Study the position of the rivers and lakes of North America (pp. 19–20). Which coast of the continent has the greatest trade? Why? Trace two great natural highways by which the products of the Great Central Plain may reach the coast.

The Atlantic Coast has many navigable rivers that lead far into the productive parts of the continent; it has better harbors than the western coast and is nearer to Europe, the chief market for American products. How would each of these facts affect the business and trade?

What people live in the northern part of the continent? What do they produce? What do you think of the value of their commerce? What people live in the southern part? What goods do they have to sell? The central part has about twenty times as many goods to sell as both the northern and southern parts together. How can this be explained?

Written Work.—1. On outline map of North America locate the chief natural divisions and largest lakes and rivers. 2. On similar map write the leading animal, vegetable and mineral productions of the continent.

4. The United States: Size, Situation, Resources.—Show the advantages of the position of the United States in North America (XXI, 1–2). What is its size? What are the chief products of each section of the Atlantic Plain (XXI, 7)? Of the Gulf Plain? Of the Mississippi Valley? Of the Pacific Highland? Of the Pacific Slope (XXI, 8, 12, 18)? Compare the products of the Mississippi Valley with those of the Pacific Highland; compare their climates. Turn to map (pp. 24, 25), and locate the following: forests, coal, iron, lead, copper, gold, silver, corn and wheat, phosphates, fruits, petroleum, cattle, sheep, and fish.

Written Work.—1. On outline map of the United States locate each of the natural divisions and write in each the leading products. 2. Draw the leading lakes, rivers, and canals (p. 66).

5. Settlement; Government; Civilization.—By what nations was our country settled (xxii, 3)? Describe its growth (XXII, 4). Population, and rank in wealth and civilization (XXII, 5, 6). How is it governed (XXIII)?

The development of the country has been greatly aided by immigrants from foreign countries at the rate of more than a half million a year. About one-third of these are skilled laborers—engineers, miners, carpenters, tailors, shoemakers, and others. Most of the rest are unskilled laborers. They have done much of the work on our railroads, tunnels, canals, and on the buildings in our great cities. We have great public school systems, state agricultural colleges, and many industrial and technical schools, as well as many private schools, colleges, and a number of great universities. All of these help to make good and useful citizens of our children and of the children of these foreigners who come to our land, and to give us our high rank in civilization.

What are the chief occupations among civilized nations? Among sav-

ages? Among nomadic, or wandering, races? Among half-civilized peoples? What are the leading occupations in the United States? How does education help a person in his occupation? Do you think we make better goods because of education? How does education improve our trade and ways of transportation?

Written Work.—1. Describe four stages of civilization, speaking of occupations, and trade, and giving examples of nations in each stage. **2.** Write a paragraph on Causes of Immigration to the United States (U. S. History).

6. The United States; Rank and Industries.—The United States produces more salable articles than any other nation. Name our six leading industries in order of value (Fig. 1). It also has more money in its banks than any other nation. This money belongs to the people; some of it is loaned to business men, and to city and state governments to carry on the business of the country, and to build great public works. The name "capital" is given to money which is thus invested in mills, factories, buildings, machinery, railroads, and other things which are used to produce more wealth. Vast amounts of capital are needed to carry on the business of the country, and it is the possession of capital that makes London, New York, and such great cities the great business centers of the world.

Eleven-twelfths of our products are consumed at home. The working people here live in better houses, eat better food, and wear better clothes

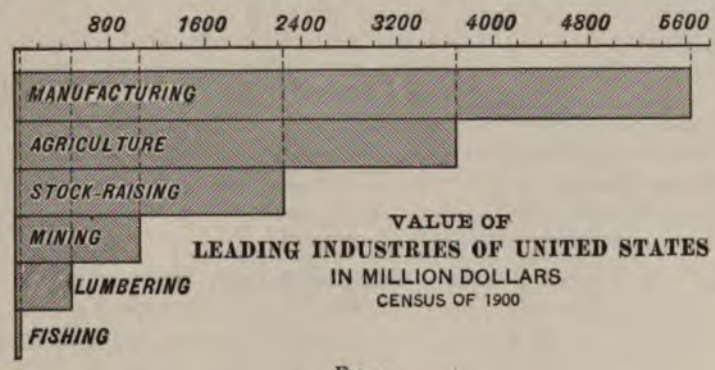


FIG. 1.

than in any other land. This is because wages are higher; and wages are higher because our industries are more profitable than in other countries. In shipping and foreign trade we rank lower than Great Britain and Germany, but in domestic trade and internal communication we are far in advance of them. At present much money and energy is being used to increase our merchant marine, as the ships carrying goods to and from our seaports are called. Why is this important? In what part of the country are agriculture, grazing, mining, manufacturing, and fishing mainly carried on (Review XXIV)? How does foreign commerce rank with other industries?

Written Work.—Write on any industry named in Fig. 1, describing its location and reasons therefor.

7. Wheat.—Agriculture is really our most important industry because it furnishes many raw materials for our manufactures. Flour could not be had without wheat, nor cloth without cotton, wool or other fiber. Of all our farm products, the grains, or "cereals," are the most valuable. They are the seeds of certain cultivated grasses, growing in all climates, from the Equator to the Arctic Circle. Grain, flour, and meal are called, in commerce, "breadstuffs." Wheat is "King of the Cereals." It grows best in rich, loamy soil, in a cool, moderately dry climate, and requires about three months to ripen. It is called "spring" or "winter" wheat according as it is planted in the spring or fall. In mild, dry climates the seed becomes much harder when ripe than in cool, moist climates. The best flour is made by mixing "hard" and "soft" wheat. Macaroni and other similar foods are made from "hard" wheat. Wheat contains much of a sticky substance called "gluten," which holds the gases that cause bread to "rise"; thus wheat bread can be made "light." The world's wheat crop is about two bushels apiece for the world's people.

A bushel of wheat will make forty-five pounds of flour. If ten ounces of flour make a loaf of bread, how many loaves a year will the United States

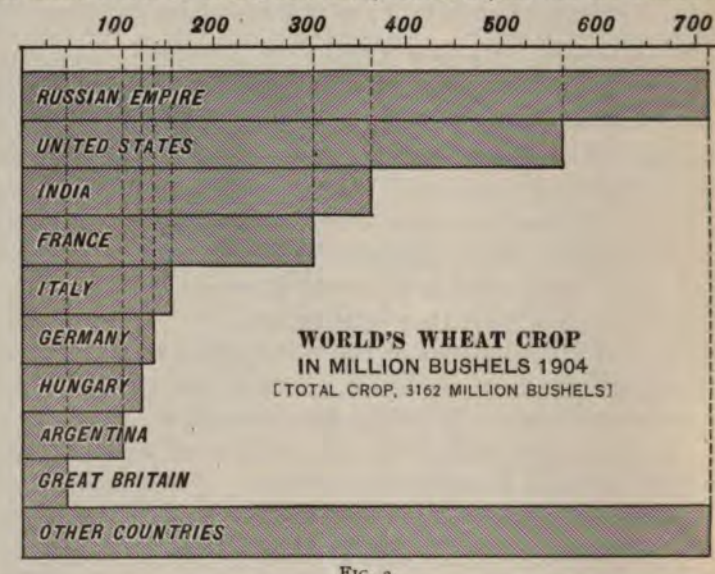


FIG. 2.

crop make for each person (Fig. 2)? How many will the crop of Great Britain make? Which nation can best sell to the other? Why might an increase in our population make our export of wheat less? About one-third of our wheat crop is exported as grain or flour to Europe. Find what nations buy it (Table II).

Written Work.—1. Write a paragraph about the wheat crop of the world, using Figure 2. **2.** On an outline map of the United States indicate by color or shading the states or parts of states producing wheat.

8. Corn, or maize, needs five months of warm weather to make a good crop. Does it probably grow best north or south of the wheat region? What people first raised corn? What name did they give it? In this country much corn is eaten in the form of bread or meal, but it is chiefly used for feeding cattle and hogs. Which of the Central States (XXXVI) lead in corn, beef, and pork? Thousands of cattle are every year driven north from the grazing regions to be fattened in the corn belt. In what forms that you know do we eat corn? Cornstarch, glucose (a kind of cheap sugar), whiskey, and alcohol are made from corn. What States

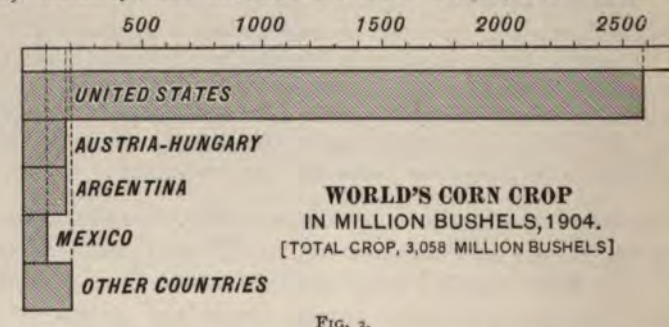


FIG. 3.

would be likely to make these articles? Corn is sown to produce fodder for milch cows. The stalks are sometimes chopped when green and kept fresh by storing them in "silos," or air-tight rooms. The corn thus kept is called "ensilage."

Written Work.—1. Find, by reference to Table VII, what States produce corn, and on an outline map show the corn-growing region of our country. **2.** Write a paragraph on the world's production of corn, using Figure 3.

9. Other Grains.—*Rye* is largely used as a food in Europe, but in this country chiefly for making whiskey. It grows on poorer soil than wheat or corn, and hence is raised in districts in the wheat belt where wheat cannot be profitably grown. About one-sixth of our small crop is exported to the countries of Northern Europe. Find the amount of our rye crop (Fig. 35). How does it compare with that of Russia? Of Germany? The greater part of our *oat* crop is fed to horses. Trade in oats is slight compared with the immense size of the crop, for oats are cheap and bulky to transport. For this reason they are grown in countries where they are needed. They grow in a colder climate than wheat. The increasing use of oatmeal for food has much decreased our export of oats. *Barley* is used mainly in making beer. Almost our entire crop is so used, but in Northern Europe it is used also for bread and for feeding horses. It will grow in a greater variety of soil and climate than any other grain. It ripens in a shorter time than even the hardiest kind of oats. Hence it can be raised on high moun-

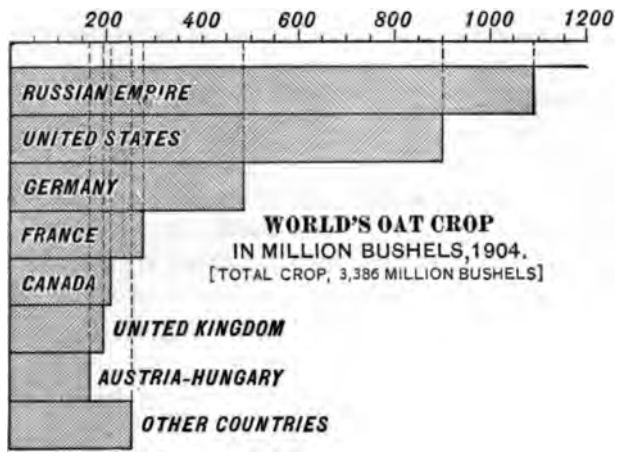


FIG. 4.

tains, and within the Arctic region. The malt remaining after straining off the beer is fed to cattle. A small part of our barley is exported to the beer-making countries of Europe. *Rice* grows best in the warm belt. The United States raises about 300,000 tons of rice annually, and imports about one-fourth as much from Asia.

Written Work.—1. Find, from Table VII, where oats, rice, barley and rye are grown in this country, and print the names of these grains on an outline map. 2. Write a paragraph on the world's production of oats or barley from Figures 4, and 34.

10. Textile Fibers are those that are used for making cloth. Cotton, wool, silk, and flax supply clothing for nearly all mankind. *Cotton*, because it is easily grown and manufactured, is cheap, and hence it is more used than the other three fibers combined. Describe the climate in which cotton is grown; the picking and the manufacture of cotton, (XXX, 7).

The greater part of our cotton is "Upland" cotton with a fiber about one and a half inches long. Describe "Sea Island" cotton (index). Egyptian and Peruvian cotton are long staple. What is the Indian cotton (index)? About one-third of our crop is spun and woven at home. The rest goes to the manufacturing countries of Europe. Describe our trade in cotton (Tables III and IV). What machines are used in cotton manufacture? Why do we import cotton? For delicate fabrics, such as laces and fine muslins, the long-fiber cotton is necessary, as it makes a fine, strong thread. Also, where great strength is required, as in the canvas webbing for bicycle tires, a long and coarse fiber, such as the Peruvian cotton supplies, is best. This explains why we import cotton although our own crop is so large.

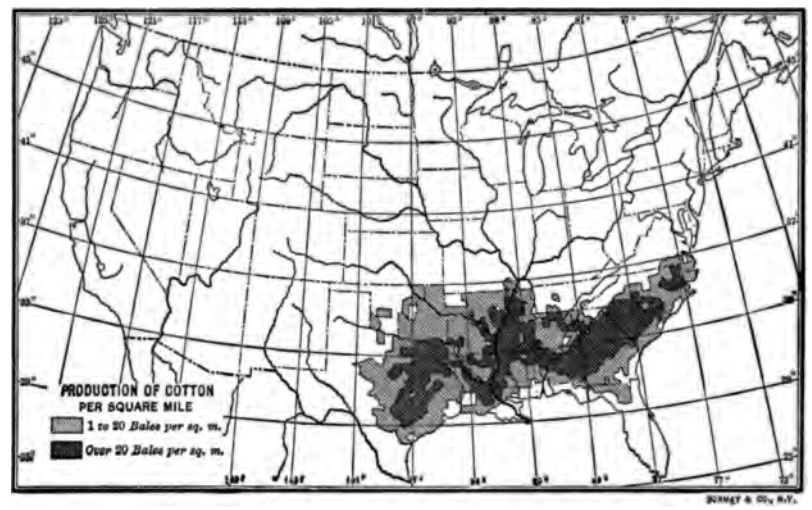


FIG. 5.

Written Work.—1. Mark on an outline map of the United States the cotton-growing States. 2. From Fig. 8 and from the text book make a list of the cotton-growing regions and color these regions on a map of the world.

(Other fibers will be studied in connection with the countries that lead in their production.)

11. Forests and Lumber Products.—The forest regions from which most of the lumber of commerce is cut form a great belt in the northern half of the North Temperate Zone. Find these regions and trace on the physical maps the northern limit of trees. The trees of the northern belt are mainly "soft" woods, such as white pine, fir, spruce, and cedar. They are easily worked and much used in building. Further south are hardwood trees, such as the oak, birch, walnut, maple and ash. Where do we find the cypress, cottonwood, palmetto, and hard pine (pp. 24, 25)? In tropical countries are found the hard "cabinet" woods. They are the most valuable, and are used for furniture and ornamental purposes. What varieties occur in Mexico? Central America? Brazil? West Indies (physical maps)? What peculiar woods are found in Ceylon? Madagascar? India? New Zealand? Australia? Japan (physical maps)?

Many of the greatest forests of the world, such as those of equatorial Africa and Siberia are yet little explored. The forests of the United States have been wastefully used, and do not supply the home demand. From what country do we get lumber (Table IV)? Wood is sold in the form of timber (logs), lumber, and lumber products, such as doors, sashes, and other forms used in building, furniture, barrel-staves and heads, woodenware, and vehicles.

Ohio and Illinois lead in the making of agricultural implements because they are in the hard-wood region, and in the

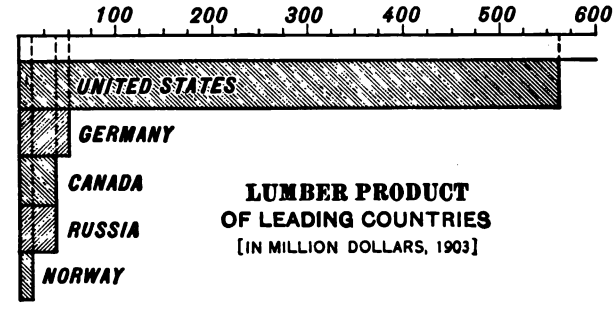


FIG. 6.

great farming region. What cities are noted for this work (Table II)? Lumber, building supplies, barrels and wood-pulp are made near the saw-mills on the edge of the forests. Furniture factories have grown up in New York, Philadelphia and Chicago because these cities are good markets; those of Grand Rapids are due to nearness to hard-woods.

Written Work.—1. Consult physical map, pp. 24, 25, and shade on an outline map of the United States the forest regions. 2. From Fig. 9 write a paragraph on lumber production of the world.

12. Other Forest Products.—Besides lumber and its manufactures there is a vast number of useful articles derived from the forests. The tanning of leather depends upon forest products (index, *bark*, *gambier*, *valonia*). About a million tons of newspaper are made in this country annually from wood-pulp. The rubber from the world's tropical forests is worth hundreds of millions of dollars yearly. Drugs, dyewoods, gums, resins, barks, and oils are made from forest products. Cork, quinine, gum-arabic, gutta-percha, amber, camphor, potash, myrrh, and lacquer

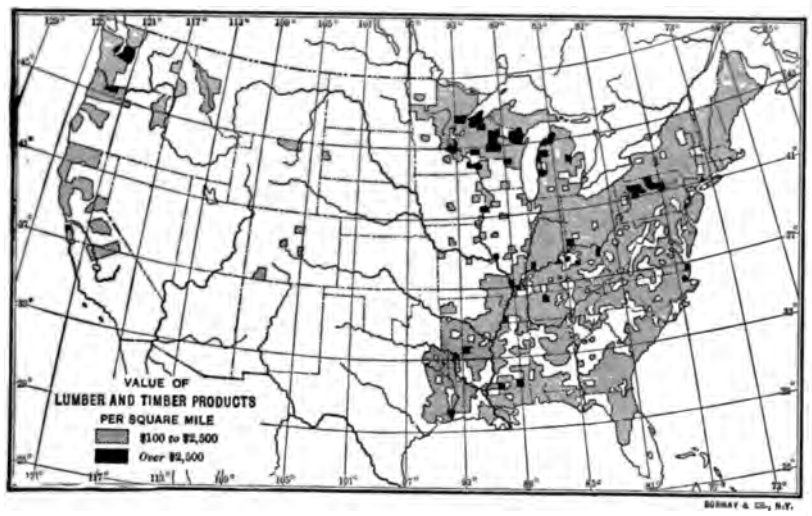


FIG. 7.

come from trees. Where is each of these obtained (see index)? Give their uses. How are naval stores obtained (XXXI)? What peculiar forest product comes from Louisiana (XXXIV, 3)? (Consult index under *logwood*, *indigo*, *madder* and other articles named above.) Copal, and kauri gum are used in making varnishes. Shellac is an important gum brought from India; it dries quickly, forming a waterproof coating, and is used to make sealing wax and as a varnish. Gutta-percha is indispensable for coating electric cables to be used under water. Rosin is used in making varnishes and soaps. What are the uses of tar, pitch and turpentine (XXXI)?

Written Work.—1. Make a list of articles made of rubber. 2. From the physical maps of the continents make list of twenty-five forest-products, giving sources and uses.

13. Tobacco grows in both cool and hot climates all over the world. The United States raises over one-third of the world's supply. Where was tobacco first used? Who can tell something of the early history of the tobacco industry in this country? The flavor and value of tobacco depends upon the soil and climate in which it grows. The Cuban variety is a favorite for cigars; Turkish and Egyptian for cigarettes; the "Perique" of Louisiana for smoking; the fine, large leaf of Connecticut is used for cigar wrappers. Over two-thirds of our crop is exported

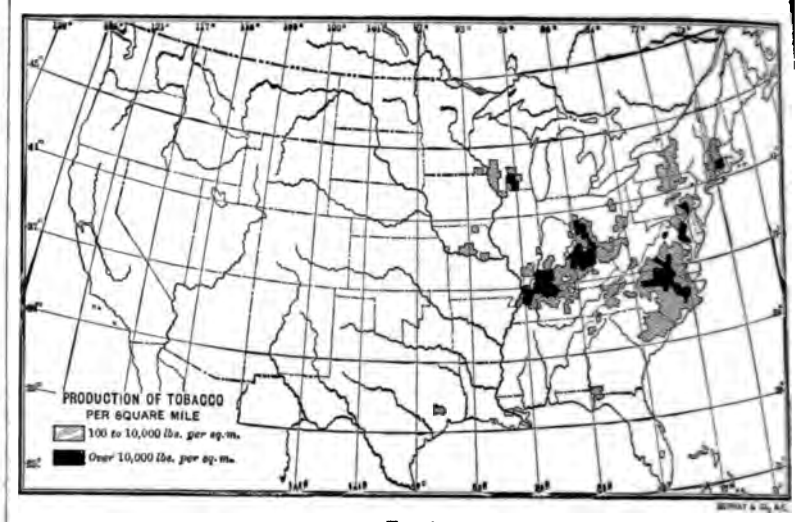


FIG. 8.

in the form of smoking and chewing tobacco to all parts of the world. But we buy, chiefly from Cuba and Sumatra, about half as much as we sell. The Cuban crop is less than one-tenth of ours in *pounds*, but equal to two-thirds of it in *value*.

Written Work.—1. On an outline map of the United States indicate, by shading, the tobacco-growing States. 2. Locate on the same map the leading tobacco-manufacturing cities.

14. Fruits and Vegetables are important articles in both our foreign and domestic trade. The Pacific slope has become one of the great fruit regions of the world. What are the leading varieties (XLIII, 4)? What fruits does Florida produce (XXXIII)? Where are apples and peaches grown (index)? Early fruits and vegetables are raised in vast quantities along the Atlantic and Gulf Coasts to supply the large cities. Fast freight lines with refrigerator cars distribute the fruits and vegetables of California and the South to all parts of the country, supplying the large cities through the entire year.

Many small fruits and vegetables are grown under glass during the winter, thus maintaining a continuous supply for the city markets. Where are wine and raisins produced (index)? Apples are the only fresh fruit exported by us to any extent. Other fruits are preserved by drying and canning, and in this form are sent abroad. What is the value of our fruit export (Table III)? To what countries is it sent? What fruits do we import? From what countries (Table IV)? Potatoes and onions are the only vegetables imported in large quantities. Where do we obtain them (XLVIII)?

Written Work.—1. Make a list of fresh fruits and vegetables seen at a grocery store. 2. Make a list of the *preserved* fruits that you might buy at the grocer's. 3. On an outline map of the United States indicate by colors the several fruit-growing regions.

15. Stock-Raising.—The raising of the domestic animals—the horse, cow, sheep, etc.—is an important industry in many countries. A mild, dry climate favors especially the raising of cattle and sheep as it enables these animals to feed out of doors through the winter and save the expense of providing food and shelter.

The Western Plains of the United States have all these advantages and support many millions of cattle and sheep. The natural "buffalo" and "bunch" grasses are nutritious food even when dried by the hot summer or buried under the snow. The cattle raised in these grazing-regions and fattened in the corn belt are the best in the world. Many of them are shipped alive to Great Britain and the West Indies, but the larger number are sent to the great meat-packing centers. Sheep are mainly raised for their wool, but several millions are annually killed for mutton.

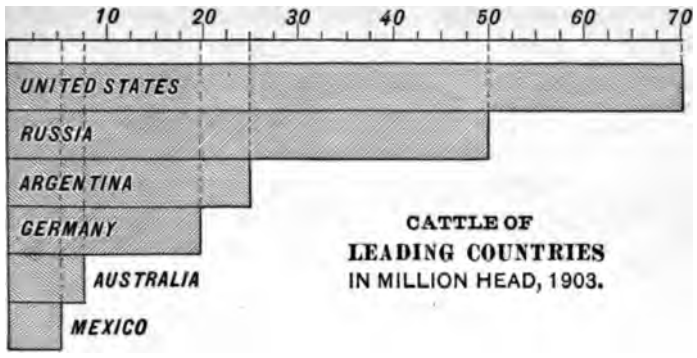


FIG. 9.

rses, mules, and milch cows are raised mainly in the rich agricultural states as they need to be kept in barns and fed during d and wet weather. Hogs feed naturally on grass, nuts, and rns, but they must be fattened on corn to make the best pork. ch attention is given on stock farms to breeding cattle for f or milk. In the same way horses are bred for speed or ngth, sheep for mutton or wool, and hogs for pork. The st mutton is produced in England, where stock-raising is most fully carried on.

rom Table VII find whether the states that lead in corn lead also in hogs. at states lead in horses? How do these states rank in other farm products? What states lead in cattle and sheep? What is the climate of these es? Their rank in other farm products? From Fig. 9 find the great le-raising countries. How do they compare with the Western Plains in iate?

Written Work.—1. On outline map of the United States show by shading states leading in cattle. 2. Show those leading in sheep, horses, or hogs.

6. **"Provisions"** is the commercial name given to mutton, f, and pork products, butter, cheese, and milk. How do they k in value with our other productions (Table I)?

The United States exports twice as much meat as all the rest the world combined. Since the invention of refrigerator cars, ssed beef has become an important article of trade. It is t from the slaughter houses of Chicago, Kansas City, l St. Louis to all parts of this country and of Europe. e best Argentine beef, also, is sent frozen to Europe, but poorer quality is prepared for sale to tropical countries by drying and smoking. We eat most of our mutton, but beef, hams, bacon, pork, and lard are exported rly from this country to the value of a hundred million lars. Name some meat-packing centers (Table II). In se centers the slaughter houses are near the stockyards where the animals are unloaded from the trains. ch set of men does only one part of the work. The hog ses rapidly along a carrier, and is bled, scalded, scraped, ned, cooled, and placed in cars, or it is cut into hams, k, and bacon, each going to a separate room to be ed, packed and shipped. In some cases this work goes on at the rate of a "hog a minute." Cattle and sheep are handled with equal swiftness.

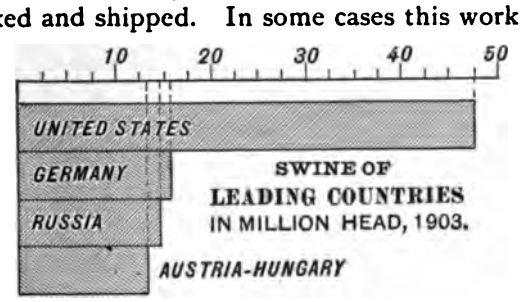


FIG. 10.

The refuse is made into fertilizers; hides are sent to tanneries to be made into hair and leather; hoofs furnish gelatine and oil; bones, horns, and tails are used. Not a particle goes to waste.

Cheese and milk factories and creameries are usually small and are scattered over the country near railroad stations, where milk can be quickly obtained, and the products cheaply shipped. An oil called "oleo" is made from the fat of cattle, and is largely exported to Holland, Belgium, and Denmark, where it is made into oleomargarine, a substitute for butter.

Written Work.—1. Indicate by color on an outline map of the United States the chief stock-raising states. 2. Place on the above map the leading shipping points and meat-packing centers (consult index under *cattle*, *sheep*, *beef*, *pork*, etc.).

17. **Our Mineral Wealth** exceeds that of any other country. What is our rank in coal, iron, copper, gold, and silver (Figs. 11–17)? In what section is each of these found (physical map)? These minerals have added greatly to our wealth. Coal furnishes fuel, and iron machinery for our factories; copper, mercury, tin, and lead are used in the arts. Gold and silver give us millions of dollars every year for use as money. Tin and lead are largely imported. Sulphur, nitrates, and many other chemicals also are imported (index). But a long list of minerals, such as clay, limestone, cements, fertilizers, such as gypsum, phosphate, stone for grinding and polishing, and building stones—from the choicest marbles to the hardest granites, are found in abundance. What states produce lead? Sulphur? Phosphates? Whence do we obtain tin? Lead? Sulphur? Nitrates (index)? What kinds of building stone can you name? Where is each found (index)? What other useful minerals can you name?

Written Work.—1. On outline map of United States write in each state its leading minerals. 2. From Figs. 11-17 write a paragraph comparing the United States with other countries as to mineral wealth.

18. **Iron and Coal.**—The presence of iron may be observed in many places by the reddish color which it gives to rocks and soil. This red substance is oxide of iron, or "iron rust." When rock contains 60 % of iron it is called "ore" and can be profitably mined.

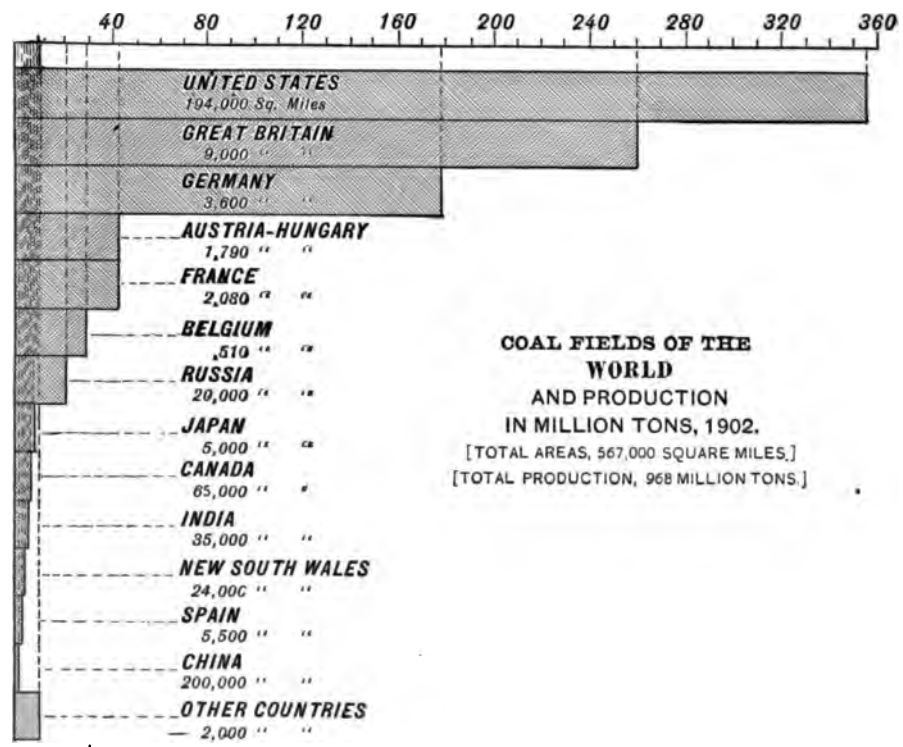


FIG. 11.

The three leading kinds of iron ore are the yellow (limonite), the red (hematite), and the black (magnetite). The two leading kinds of coal are hard, or anthracite, and soft, or bituminous. Anthracite burns with little smoke, and is therefore valuable for heating in cities and on railroads. The supply of anthracite is comparatively small. It is found chiefly in Pennsylvania, though there is a little in Colorado and New Mexico. Bituminous coal burns with a flame, giving off much smoke and gas. It is used in engines, in gas making, and to make coke. Coke is made by heating bituminous coal in ovens till the gases and coal tar are largely driven off. The gases are used for lighting, and the solid residue is coke. This coke is used for smelting. The largest coke ovens in the world are in the Connellsville district south of Pittsburg.

The separation of a metal from the ore by means of heat is called "smelting." The richest iron ores in this country are found along the shores of Lake Superior, and the best smelting coal is in western Pennsylvania. This coal and iron can be most cheaply brought together along the southern shore of Lake Erie. The Lake Superior ore is mined in open pits and shoveled into self-dumping cars by steam. These cars discharge the ore through chutes into the ore-ships which distribute it to the iron manufacturing towns along the lakes. The coke and limestone are brought here by rail. This convenient location of raw materials has made the region bordering the southern shore of Lake Erie the greatest iron and steel manufacturing section in the world. The Birmingham district in Alabama also has all the advantages for cheap iron making and ranks next in output to the Lake Erie region.

Written Work.—From Table VII make a list of the leading states producing coal, and the number of tons produced by each.

19. Petroleum and Natural Gas are generally found near the coal fields. They come from trees and plants that have been buried in the earth for ages. The gas is consumed in the neighborhood of the wells, but petroleum in its refined form as kerosene is used in every part of our country and is one of our five great exports. Besides kerosene, over two hundred other products are obtained from petroleum. Gasolene, naphtha, vaseline, aniline dyes, drugs, and soap are some of these.

The crude oil is pumped from the wells through pipe-lines to the sea-board. Here are great refineries which separate from the oil naphtha, gasolene, and

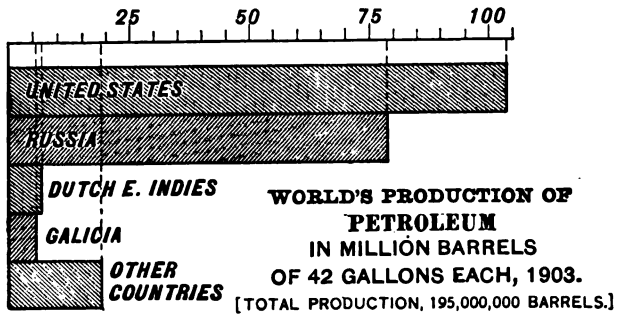


FIG. 12.

kerosene. What is left is made into vaseline, paraffin, anilines, and other "by-products." Refined oil, or kerosene, is run into tank-cars and steamers and sent to all parts of the world. What do you know about oil-wells (XXVIII, 6)? Natural gas is obtained by boring into the earth until the gas is found. It is then led through pipes to the cities, where it is used for both fuel and lighting. Natural gas forms the best fuel for glass-furnaces, and therefore the most of our glass is now made in the gas regions.

Written Work.—1. Locate on an outline map the petroleum fields of our country. 2. Write from Fig. 12 a paragraph on the distribution of petroleum in the world.

20. Copper is, next to iron, the most useful metal. *Brass* is made by melting together copper and zinc. Such a mixture of metals is called an "alloy." *Brass* ranks next to iron an in usefulness. *Bronze* is an *alloy of* copper and tin. Th use of copper to-day is as *a conductor* of electricity.

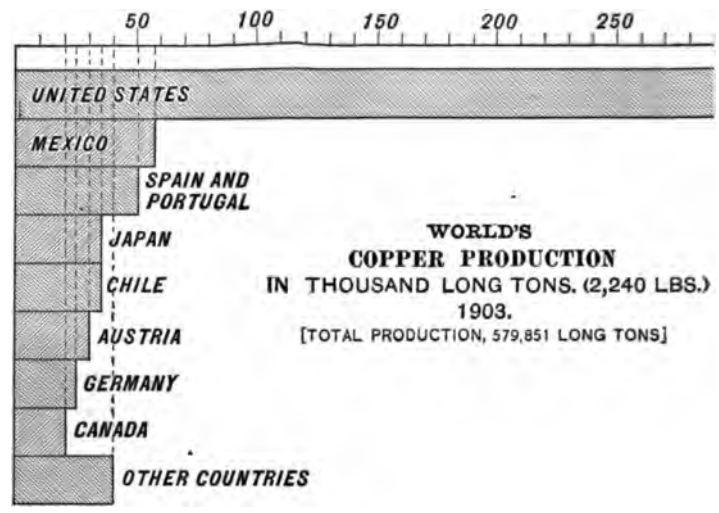


FIG. 13.

copper wires carry the current many miles to be used in r cars and machinery of every sort. Where is the world's of copper obtained (Fig. 13)? What part of the world's does the U. S. supply? From what states is copper ol (Table VII)? The Lake Superior region, Arizona, and M yield six-sevenths of our copper. The veins in one M mine, which run through solid granite, are ten feet thi Michigan, pure copper is found in masses weighing fro hundred to six hundred tons. These must be broken u hammer and chisel before they can be raised to the s The United States, owing to superior methods of smelti refining copper, finds it profitable to import ores from C Mexico and Japan, and to export the refined metal i About half our refined copper is exported to Europe, through New York and Baltimore, because large refine near those cities.

For what is brass used? Can you mention anything made of Waterbury and Bridgeport, Conn., lead in the manufacture of br Name some forms of electrical apparatus using copper wire. Nar uses of copper.

Written Work.—Write on outline map the copper-mining, smelting, a facturing centers of the United States.

21. Gold and Silver are called the "precious metals," al they are not as expensive as some metals which are rarer. are of great importance to the world because of their money. Money is of great importance in carrying c business of a country as it is used to measure the valu goods that are bought and sold. Just as we want our weight and our gallon measure to be always the same, want our measure of value to be always the same. The st of value in the United States is the gold dollar. It c about 25 grains of gold 90% pure. Gold is the stanc value in most of the great commercial countries. Th of gold is very regular. If it were sometimes fo vast quantities, and again in very small amounts, it be more expensive at one time than another. This make it poor material for money. Both gold and silv been used as money from the earliest times. Gold is no

combined with other substances in an ore. It is found as a pure metal in the sandy beds of brooks and rivers, in banks of sand and gravel, and in quartz rock obtained from mines. It is obtained from sand and gravel by washing out in a pan. This is called "placer-mining." Hard banks of gravel are broken down by powerful streams of water. This is called "hydraulic mining" (XLI). The quartz rock is ground-up in powerful mills. Gold

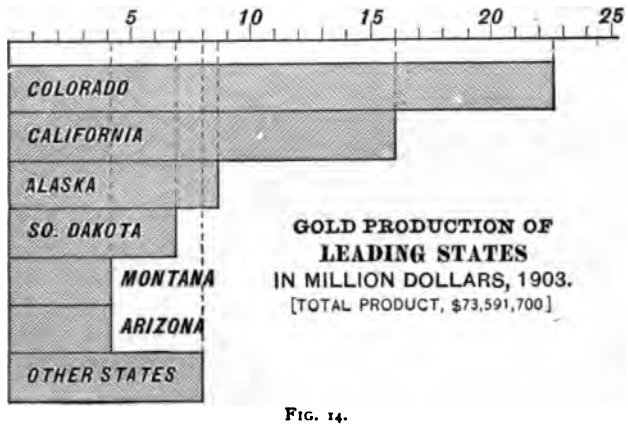


FIG. 14.

is extracted from gravel and ground-up rock by washing or by dissolving in mercury or cyanide of potassium.

The rock and gravel is washed down through long chutes with cross-pieces or "ripples," at the bottom holding mercury. The heavy grains of gold drop into the mercury and are dissolved. The mercury is separated from the gold by heat which drives it off in the form of vapor, leaving the gold behind.

Silver is found as an ore mixed with lead, copper, and sulphur. The ore is roasted, to drive off the sulphur, and then ground to powder and mixed with quicksilver. The quicksilver dissolves the silver, forming a soft mixture, which, when again heated, loses the quicksilver as vapor, the silver remaining behind. Name the chief uses of silver and gold in the manufacturing arts. What common articles are made of silver?

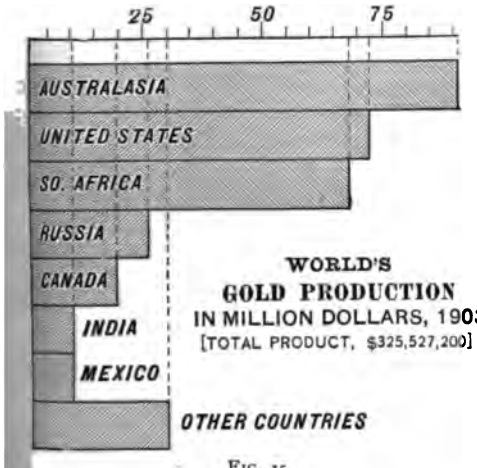


FIG. 15.

Written Work.—1. Locate, on an outline map, the States of gold and silver production in the United States (index and Table VII). 2. Write a paragraph upon the world's distribution of gold and silver, using Figures 14 and 15.

22. **Other Minerals.**—*Aluminium* is obtained from clay and is the most abundant metal. It is light, strong, and is a good carrier of electricity, but is expensive to manufacture, costing twice as much as copper. Only small ornamental articles are yet made from it. *Manganese* and *nickel* are often used to make very hard steel. For what else is nickel used? Where is *zinc* obtained (index)? Did you ever see any? Zinc and lead are both used in manufacturing paint. Give other uses of lead? What States produce it (index)? *Salt* is a most important mineral. What is its chief use? It is also used to preserve meat and fish, and in making soda and glass. Where is salt produced (index)? *Clay* is used in making bricks, tiles, drain pipe, stoneware and terra cotta. It has many other uses. What states lead in the pottery industry (index)? What kinds of building stone can you name? Where is each obtained (index)? *Cement* when mixed with water hardens to stone, which dampness cannot penetrate. The largest Portland cement works are in eastern Pennsylvania and western New Jersey.

Portland cement is made by grinding a natural rock with lime. It is used for making sidewalks, artificial stone, and for the foundations of buildings. The name comes from the resemblance in color to the stone from the Isle of Portland, England.

Graphite is a form of carbon. Where found and for what used? Phosphate, gypsum, and nitrate of soda are used as fertilizers. Describe mercury and tell some of its uses. Nearly all the world's mercury comes from Almaden, Spain, and from New Almaden, California. What is slate and where found? Name its uses. Platinum is a metal more valuable than gold. It is used in making vessels for handling certain acids which would corrode other metals and for delicate electric connections.

Written Work.—1. On an outline map of the United States locate each of the minerals named above. 2. Choose some metal and write an account of where it is found, things made of it, and their uses.

23. **Manufactures in the United States.**—Our manufactures exceed in value those of any other country. Name some of the materials which come from our fields, pastures, and mines, which we manufacture, or change into other forms, by the use of machinery. These are called "raw materials." In their altered forms they are called "manufactured products." Where is manufacturing chiefly carried on (p. 30)? What makes New

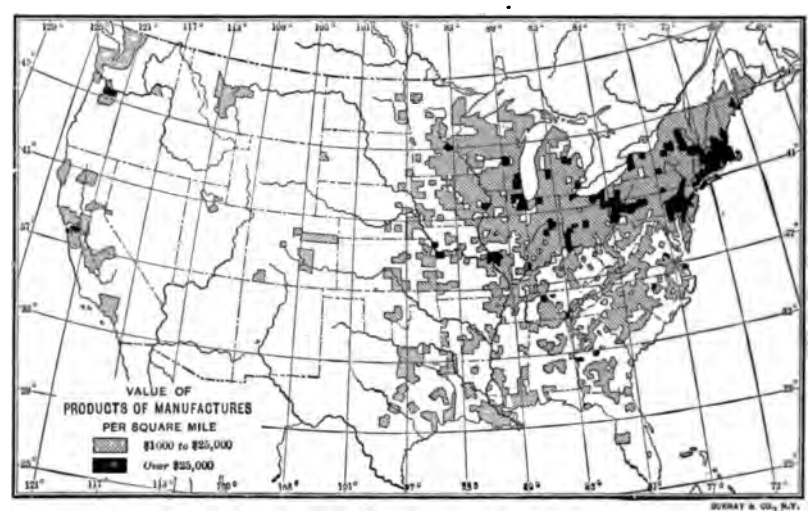


FIG. 16.

England a manufacturing region (XXV)? What helps to make the Middle Atlantic States a manufacturing region (XXVIII)? What advantages have the Central States for manufacture (XXVII)? Why has agriculture heretofore predominated in the Southern States? Why is manufacturing now increasing there (XXX, 7)? What occupations exceed manufacturing in the Rocky Mountain and Pacific States? What natural conditions cause this (XLII)?

Why are iron and steel made in western Pennsylvania (**18***)? On the same principle explain the making of furniture in Michigan, turpentine in Georgia, malt liquors in Wisconsin, meat products in Illinois, steel in Alabama, and cotton goods in South Carolina. Find some other manufacturing industries established near the source of raw material. On the other hand, the location of a factory may be due to convenience of *power*. Explain the early establishment in New England of factories using Southern cotton; name cities of New England built near sources of water-power (XXV)? An industry

* Figures in heavy type refer to paragraphs in these lessons.

once established in a place may remain after the cause of its establishment has ceased to exist. There are factories in New England run by coal brought from Pennsylvania that were established because of water-power now no longer used. Agricultural implements are made in Illinois, Ohio and Indiana, chiefly because the *market* is near. Sugar and petroleum are refined in New York because they can be most easily brought there. Many industries will be established as well in one place as another. Thus Paterson in New Jersey leads in silk and in locomotives, Ansonia in clocks, and Brockton in shoes, because the energy and skill of certain men have built up these industries. The building of a railroad may develop industries along its route. Many a little station starts its creamery or canning factory because transportation is swift and cheap, and milk and fruit easy to obtain.

Written Work.—1. Write a paragraph on uses of steel. 2. Make a list of all the circumstances affecting the location of manufacturing towns.

The needs of a manufacturing nation are: *a*, raw materials; *b*, waterpower or fuel; *c*, good facilities for transportation; and *d*, a market for the goods made. Over 96 per cent. of our manufactured goods are used at home. This shows the rapid development of our country and the high state of civilization and intelligence of our people. American education, intelligence, and inventive genius have caused American machinery and labor-saving devices to be the best in the world. For these reasons, we are able to produce a greater variety of manufactured goods, and at a less cost, than most countries. The following will give an idea of the immense value of our manufactures.

TABLE I.

OUR TWENTY CHIEF MANUFACTURING INDUSTRIES AND APPROXIMATE VALUE IN 1903-4.

Iron and Steel Goods	$975,000,000
Machinery and Engines	950,000,000
Preserved Meats (beef and pork)	790,000,000
Lumber and Manufacturers of	735,000,000
Textiles (cotton, woolen, linens and silks)	690,000,000
Clothing	623,000,000
Flour and Meal	560,000,000
Paper (including wood pulp), Stationery, Books and Newspapers	522,000,000
Leather and Leather Goods	520,000,000
Cars and Vehicles	340,000,000
Distilled and Malt Liquors	334,000,000
Building Materials (brick, stone, lime, cement)	320,000,000
Manufactures of Tobacco	293,000,000
Copper, Brass, and Bronze	254,000,000
Refined Sugar and Molasses	241,000,000
Lead Products	183,000,000
Bread and Bakery Products	175,000,000
Furniture and Upholstering	133,000,000
Butter, Cheese, and Condensed Milk	131,000,000
Refined Petroleum	124,000,000
Other Manufactures	4,090,000,000
Total	$13,000,000,000
Cost of Raw Materials	7,000,000,000
Net Value of Our Manufacturing Industries	6,000,000,000

What are our two chief industries? What is the value of both? What does this show about our industrial rank. Why is the third so great? Account for the fourth. The sixth. The seventh. Give reasons for the eighth. How are the third and ninth related? What is the total value of all our manufactures? How much value has been added by labor to the raw materials?

Written Work.—1. Write on the chief manufacturing nations of the world, using Fig. 19, giving rank of the United States, and compare the value of our manufactures with that of other leading countries. 2. Make a list of some great inventions that have aided our manufactures.

24. Iron and Steel.—The extent to which iron and steel are used measures the rank of a country in manufactures, commerce, and civilization. Compare *Figures 17* and *19* and show how they agree with this statement. The latter half of the 19th century is sometimes called the "age of steel," because during that time steel began to take the place of wood and iron wherever strength and durability were required, just as we call the beginning of the 20th century the "age of electricity."

What is the rank of the iron and steel industries of this country? With machinery and foundry products, the value of this branch is nearly one-sixth of the total value of all our manufactures (Table I). About one-twentieth

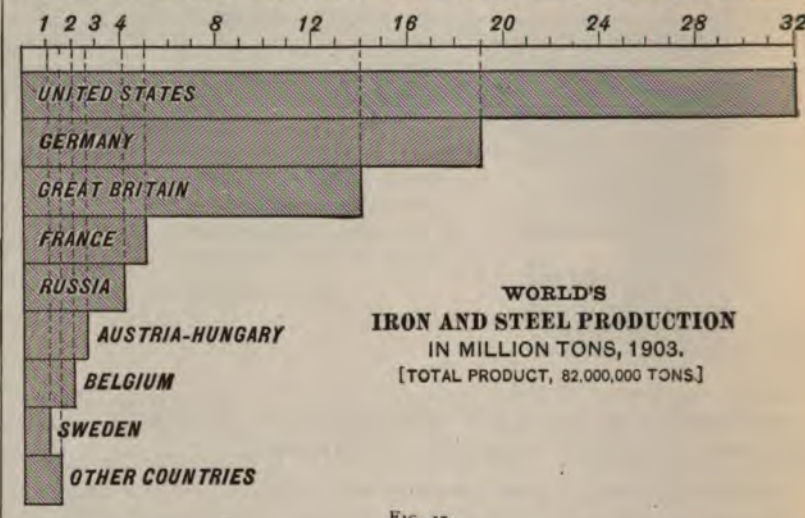


FIG. 17.

of this finds its way to foreign countries. One-half of these exports consists of electrical and sewing machines, pumping and mining machinery, engines, boilers, and printing presses. Other iron and steel exports are locks, hinges and other builders' hardware, tools, wire, and fire-arms. Steel ships, armor plate and cannon are of great importance (index). Nineteen-twentieths of our iron and steel goods are used at home. This shows that our industries are developing rapidly and that our domestic trade is vastly larger than our foreign trade. Besides the goods mentioned as exports, we use much steel in rails for our railroads and in frames for the thousands of steel buildings erected every year in our cities. Make a list of other uses of steel.

The difference in hardness between iron and steel is due to the amount of carbon contained. Carbon was formerly removed from iron by very laborious methods, but this is now done quickly and easily by the Bessemer process. Melted iron and ores containing metals which will harden the iron, are put into a vessel with small holes in the bottom through which a blast of air is blown. This blast of air burns out the carbon in the melted iron, and thus changes it into steel.

The vessel, or "crucible," is then tilted by means of pivots let into the sides, on which it is suspended, and the melted steel is run into moulds of any desired pattern. Much of it goes in the form of bars and plates to the rolling-mills where heavy machinery rolls it into rails, armor plates, sheets, and various other forms for immediate use, or for further manufacture.

25. Textile Goods.—The word "textile" includes all fibers that can be made into cloth. Name the chief animal fibers; vegetable fibers. Asbestos is sometimes called "mineral wool" because it can be made into cloth. Cloth-making is a leading occupation in all parts of the world. Name some kinds of covering for the body used by different races. In what climate is fur used? Wool? Silk? Cotton? Grass and straw are often used by the people of China and Japan.

Cloth-making by machinery began in England about the time of the American Revolution and was soon afterwards introduced into America by Samuel Slater. Account for its growth in New England; in the South. Where are the chief centers of cotton manufacture (index)? Describe four

steps in cloth-making. Name some varieties of cotton goods. What are "prints?" "Ginghams?" Laces, embroideries, and other trimmings are the most expensive form of cotton goods. Where are our silk and wool obtained (Table IV). Where do we get our linen goods? What cities lead in the manufacture of silks and woolens (Table II)? Cotton, linen, wool, and silk are mixed together in the making of some cloths, cotton being used with the more expensive fibers to lessen the cost of the product. What

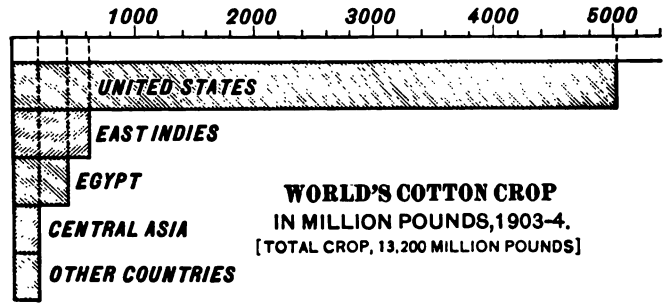


FIG. 18.

ports ship most of our cotton? What reason can you suggest for this? Find out from Table III the value of our cotton export. For what are the seeds of the cotton-plant used (XXX, 7)?

Written Work.—1. Turn to Tables III and IV and compare our exports of raw materials and cloth with the imports. 2. On outline map of the United States indicate by color the States producing cotton and wool.

26. Clothing for men, women, and children is one of our largest factory products. What is its value (Table I)? Over two-thirds of all the clothing worn in this country is factory made. Standard patterns of all sizes are made, and the cloth is cut and sewed by machinery. The large cities are the centers of this work. The clothing is sometimes made in factories, but much of it is done by men, women, and children in their homes. They are paid by the "piece," and often receive very low wages. New York stands first in this business. What six cities rank next (Table II)? These large cities are wholesale centers to which merchants from smaller towns come to buy clothing. This explains why clothing is manufactured in large cities. In your city, which is cheaper, "ready-made," or "tailor-made" garments? Why? The cheaper grades of cloth from our home factories are mainly used for "ready-made" clothing, while the more expensive goods brought from France and Great Britain, on which there is a high rate of duty, are used in work made to order.

Not only suits, overcoats, and cloaks are now made in factories, but underwear, collars, cuffs, neckties, hosiery, and every kind of knit goods are thus made. Can you tell why the factory process makes goods cheaper? How does the quality compare with that of home-made and tailor-made garments?

Written Work.—A truck being loaded with rolls of cloth is seen in front of a wholesale store; farther on a woman is seen carrying upon her head a great bundle of partly made garments. Write what is suggested to you by this.

27. Flour, meal, and bakery products.—What are the cereals (7)? Where are they grown (7-9)? What is the value of wheat for bread (7)? Why is not flour among the manufactures of New England (XXVII, 8)? In what part of the country do you think most of our flour is made? Many country places have mills where wheat, corn, and oats are ground between big stones which are made to revolve by water-power, but most of our flour is made in enormous mills near the wheat regions, where the grain is crushed by a series of immense steel rollers. What city leads in the manufacture of flour (Table II)? Other milling towns are located along the great lakes and canals. Why is this? What do we receive for the breadstuffs sent abroad? What countries purchase breadstuffs of us? Which of our ports ship flour abroad (Table III)?

In most American cities, and even in small villages, the people depend largely upon local bakeries to supply them with bread, pies, and cakes. "Crackers" or "biscuits" of many varieties form a considerable article of domestic commerce. In the largest bakeries the baking is done in enormous rotary ovens revolving slowly in heated chambers. Every revolution of the oven turns out hundreds of loaves or pies. The annual product of these bakeries is nearly two hundred million dollars. In the country, baking is almost entirely done in the home.

Written Work.—1. On your outline map of the United States showing the wheat regions, locate the chief cities engaged in making flour (index under "flour"). 2. Children who live near a bakery write on "What I Saw in a Bakery."

28. Leather.—From what is leather made? The skins of the larger full-grown animals are called "hides." What part of our country supplies hides? From what foreign countries do we obtain them (Table IV)? The process of making leather from skins is called "tanning." This requires large quantities of oak and hemlock bark. These barks contain a substance called "tannin," which hardens the hide, and prevents it from putrefying. Most of the bark used is from our own forests, but there are also imported forest products used in leather-making. When the New England forests decreased, the tanneries of the country moved southward. Recently a process of tanning, called the "chrome" process, has been invented which dispenses with the use of bark and vegetable materials. The finer and softer kinds of leather are made by this process. "Morocco" and "Russian" leathers are fine varieties used in book-binding. The French make the finest leather for gloves and shoes. They also excel in making "patent" leather, which is ordinary leather coated with a glossy, waterproof lacquer.

The fur, wool, and hair obtained from the skins have important uses. The hair is mixed with mortar to give it toughness; the fur is used in making hats, and the wool for clothing. Some skins valuable chiefly for their fur are called "fur skins." They are tanned here and then sent to London and Leipsic to be dyed and prepared for making into "furs" for winter use. Our imports of hides and skins and our export of leather have doubled within a few years.

Written Work.—1. Make a list of articles made of leather. 2. From Tables III and IV write a paragraph on our trade in hides and leather. 3. On map of the world color the countries producing leather (see index under leather).

29. Other Manufacturing Industries besides those we have studied are of great importance. More money is spent for *wine*, *beer*, and *distilled liquors* each year in the United States than for the grain and meat used for food. What places are noted for each of these articles (index)? How many things can you name that are made of *clay?* *Bricks* are made in all parts of the country, but New Jersey and Ohio are the leading states in the pottery industries. Trenton and Perth Amboy have terra-cotta works. East Liverpool and Cincinnati, Ohio, also make fine ware. "*Chemicals*" is the name given to a large class of products. Among them are borax, alum, potash, fertilizers, soda, paints, dyes, medicines, oils, extracts, alcohol, and hundreds of similar articles of less importance. Find the value of our trade in chemicals (Tables III and IV). What things are made of paper? How do paper goods rank among our manufactures (Table I)? Of what raw material is newspaper made (index)?

What cities make jewelry? What of our trade in jewelry and precious stones? Glass-making is also a leading industry in several states (19). What articles, made of glass, are most largely used? The finest glass, rolled into plates, is called "plate glass."

All the above are large industries worth many millions of dollars annually. When we think that nearly everything we use is a factory product, we realize the immense extent of our manufactures. Every button, pin, needle, pen,

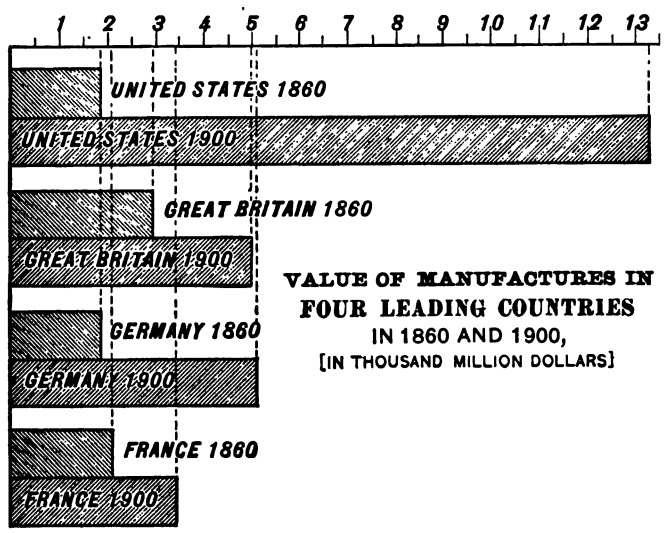


FIG. 19.

pencil, knife, and the many little conveniences of every-day use was made in a shop with millions of others of the same sort. Every industry gives employment to many hands, nearly 6,000,000 workmen being wage-earners in our factories.

Written Work.—1. If you have made a visit to some factory, describe what you saw. 2. *Manufacturing* means strictly "making by hand," but now most manufacturing is done by machinery. Write an account of some "hand" manufacturing that you have seen.

30. The Government's Relation to Commerce.—In all countries commerce is carried on according to regulations made by the government.

Our government protects our ships, our merchants, and other citizens in all parts of the world. Our navy is divided into squadrons stationed in various parts of the world, so that a ship can be sent to any place in case of trouble. Do you remember a case in which our navy used force to protect our trade? We have an officer called a "consul" in each important city of the leading countries. It is his duty to watch over our interests and the interests of our citizens in those countries, and to secure information that may help our trade.

The government also dredges out harbors, grants land to railroad companies, helps build canals, improves river navigation, keeps lighthouses along the coast, marks channels with buoys, and pays steamship lines to carry the mail. When canals and railroads are within the boundaries of any State, the State controls them, but when they lead from one State to another they are under the control of Congress. The government furnishes information to merchants concerning crops, markets, and prices in all parts of the world. This information is published and sent free to those who ask for it. Daily weather reports also are issued, and storm signals displayed, so that sailors and farmers may be warned of coming storms.

Written Work.—Make a list of the various duties of the government toward commerce and show the advantage of each.

31. Our Domestic Trade is about twelve times as great as our foreign trade. Of the vast products of our fields and factories amounting to eighteen billions of dollars, nine-tenths is used by our own people. The "moving" of our crops and the distribution of our varied productions requires vast systems of transportation and gives employment to millions of men. What causes can you give for this domestic trade? Where do the people of the great manufacturing cities of the East obtain flour and meat? Where do they get cotton? Hides? Lumber? Wool? Naval stores? What part of the country supplies the West and South with manufactures? With timber? In general, which way do raw materials move? Food products? Manufactured goods? What trade is carried on between country and city? Between large cities and small towns and villages? Between the coast and the interior? What do the farmers of Kansas and Iowa buy in exchange for their wheat and corn? Where do these things come from?

If we think how many things are required to supply all our needs, and that most of them are made in comparatively few places, and often in a single city, we shall see how far goods must be carried to reach all the people who need them. We shall see also how many shops, stores, and markets are needed to sell these goods, and what a vast number of people may find employment as merchants, clerks, messengers, and carriers. All this helps us to understand the great volume and importance of our domestic trade.

Written Work.—1. Describe the trade and transportation necessary to provide us with a breakfast of oatmeal and milk, coffee, rolls and eggs. 2. Write what you know of the business of a grocery store. 3. Of a meat market.

31. Inland Transportation.—What are the uses of roads? Which roads are most used by the farmer? We have about 3,000,000 miles of wagon roads and 200,000 miles of railroads in the United States. Show the importance of each kind. Describe our great waterways (XXIV, 6). Name three rivers belonging to the Mississippi system, and the chief cities on their banks. Name ten rivers of the Atlantic Slope, and their chief cities; the rivers and cities of the Pacific Slope. Why do we usually find a city located at the mouth and one at the head of navigation of a river (p. 67)? How far is the Mississippi navigable (p. 24)? The rivers of the Atlantic Slope? The steam-

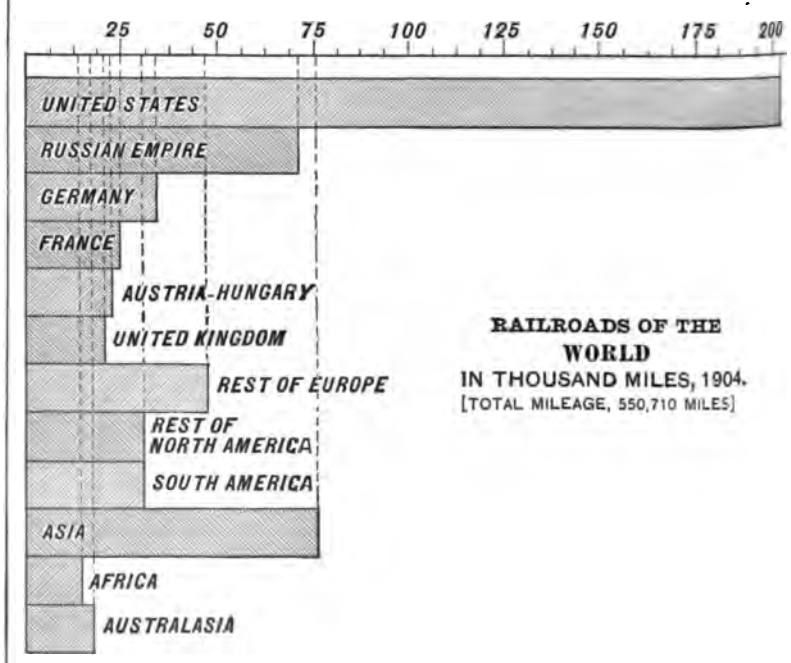


FIG. 20.

boats plying on the rivers bring farm and garden produce to the cities and carry away goods sold to the merchants of the smaller inland towns.

Locate and give the connections and commercial uses of the Erie Canal; the Sault Ste. Marie; the Welland Canal; the canal connecting the Hudson and Lake Champlain; Lake Erie and the Ohio; at the Falls of the Ohio (XXXVII, 2); connecting Lake Michigan and the Illinois; Lake Winnipeg and the Mississippi (XXXIX, 3); around the falls of the Schuylkill.

(Railroad lines, Map of Transportation and Travel.) What roads go from New York through Albany to Buffalo? These roads have parallel lines on both sides of the Hudson, and across the State. What road goes to Buffalo through northern Pennsylvania, and southern New York? Find the Delaware and Hudson; the New York, New Haven and Hartford; the Central Vermont; the Boston and Maine. This road connects with Troy, New York, and has a network of tracks from central Massachusetts northward. Find the Grand Trunk branch from Portland to Montreal. When the St. Lawrence is frozen, Canadian trade is carried over this road. New York is a great center for the transfer of freight and passengers. Goods brought from the northeast and northwest by rail, coasting vessel, or canal, are there transferred to vessels going to foreign countries, and to cities along our coast. Some goods are ferried to the Jersey shore for reshipment by rail, while freight and passenger trains are ferried around Manhattan to and from the Jersey coast. This convergence of many lines of transportation makes New York City probably the greatest distributing center of the world.

Follow the Erie road from New York to Chicago. Trace and name the roads from Chicago to Buffalo; to Quebec; to Cincinnati; to New Orleans; to St. Louis and Omaha; to El Paso, in Texas; to Denver; to Duluth. Trace and name the roads from Philadelphia to New York, Pittsburg, and Washington; from Baltimore to Cincinnati; Richmond to Cincinnati. Trace the routes of the Southern, the Atlantic Coast and the Seaboard Air Lines. What cities are connected by the Central of Georgia? Follow the Louisville and Nashville from New Orleans and Mobile to St. Louis; from Memphis to Cincinnati. By what great roads might you travel from New Orleans to San Francisco? From San Francisco to Chicago? From Portland, Ore., to Duluth?

Written Work.—1. Insert on outline map of the United States the chief railroad centers and termini of canals. **2.** Describe the trade carried in each direction on railroad lines between Chicago and New York.

32. Coasting Steamship Lines.—(Map of Travel and Transportation). A vast number of steam and sailing vessels, perhaps 40,000 in all, are engaged in carrying goods from port to port along our coasts and between home and foreign ports. Our coasting trade is by law entirely carried on by American vessels, but five-sixths of our foreign trade is carried by the ships of Great Britain, Germany, Holland, and other nations. New York is the chief receiving and distributing point for the cotton and lumber of the South, the grain, cattle, and wheat of the West, the manufactures of the North and East, and of our imports from foreign countries. What six ports rank next in order (Table V)?

From what you have learned of the productions and trade of the different sections of our country, name some goods which might be carried each way by the following lines of steamships on trips named:

Mallory: Galveston, Mobile, and Brunswick, Ga., to New York. *Merchants and Miners:* Savannah to Baltimore and Philadelphia; New York, Washington, and Baltimore to Boston. *Southern Pacific:* New Orleans to New York; New York to San Francisco and Portland, Me. *Clyde:* Charleston and Jacksonville to New York. *Fall River, Joy, and other Sound Lines:* New York to Boston, Providence, and New England points. *Pacific Coast Line:* Tacoma to San Francisco, Los Angeles and San Diego. *Alaska Steamship Co.:* Seattle to Dawson and Juneau. *Old Dominion:* Norfolk and Baltimore to New York. *Eastern Steamship Co.:* Boston to Eastport and Portland. About 100 transportation lines on the great lakes, connecting Duluth, Superior, Chicago, Detroit, Buffalo, Cleveland, Milwaukee, and other ports.

Almost all passengers and much freight going from Atlantic to Pacific ports goes by rail across the Isthmus of Panama. But much heavy freight goes in large schooners around Cape Horn. All this time and expense will be saved when the Panama Canal shall be completed. What do you know of this canal (see Recent Geographical Events)? Besides our steamship coast trade, we have a large number of sailing vessels, which carry such heavy cargoes as coal, lumber, brick and stone, naval stores, and ice. Our fisheries also employ many boats.

Written Work.—1. On a map of the United States locate the leading seaports and draw and name the steamship lines connecting them.

33. Ocean Steamship Lines.—An important part of our foreign trade is with the West Indies, and the ports of the Gulf of Mexico and Caribbean Sea. This trade is about half carried by our own ships, which make several trips a month.

From Tables III and IV and Fig. 29, find out what goods might be carried each way by the following lines: *Ward:* New York to Havana. *Plant:* Boston to Halifax. *United Fruit Company:* Boston, New York, Philadelphia, Baltimore, Mobile, and New Orleans to most points in Central America, Columbia and the West Indies. *Munson:* New York, New Orleans, and Mobile to Havana. *Lamport & Holt:* New York to Rio, Buenos Aires and Pernambuco. *Red "D":* New York to Porto Rico and Porto Cabello. *Cuba Mail:* New York to Tampico, Vera Cruz, and Progreso. *Panama Railroad Line:* New York to Colon.

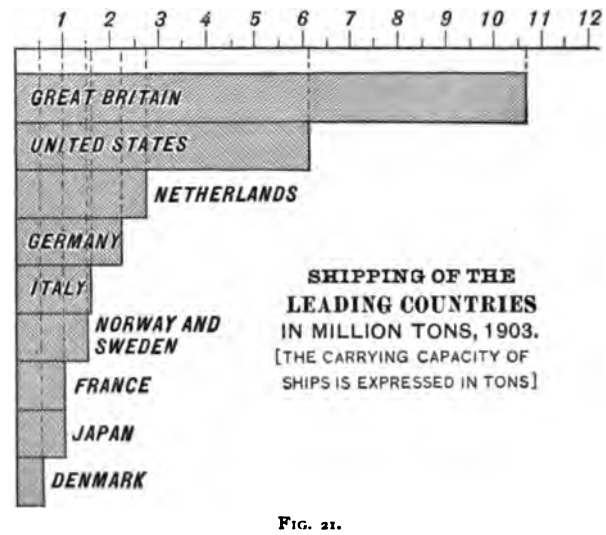


FIG. 21.

There is a much larger number of steamships engaged in the trans-oceanic trade; but owing to the greater length of voyage, only one-third as many trips can be made as by a "coaster." Many sailing vessels also make long voyages from American ports to Asia, Africa, and Australia. A large part of our trade is carried by "tramp steamers." They do not run regularly between the same ports, but carry cargoes to any part of the world.

On the trade chart (pp. 126–127) trace the course of the following steamship lines and tell, from Tables III and IV, what goods might be carried each way on any given voyage: *Cunard:* New York and Boston to Liverpool. *White Star:* Boston, New York, New Orleans, and Philadelphia to Liverpool and London. *North-German Lloyd:* New Orleans, Baltimore, New York, and Galveston to Plymouth, Cherbourg, Southampton, Bremen, and Naples. *Hamburg-American:* New York and Philadelphia to Hamburg. *Elder-*

Demster and Horsley Lines: Mobile to Liverpool and Havre. *Red Star:* New Orleans and New York to Antwerp. *Great Northern:* Tacoma and Seattle to Yokohama, Shanghai, and Manila. *Oriental:* San Francisco to Honolulu and Hongkong. *Strachan:* Brunswick, Ga., to London, Liverpool, Glasgow, Havre, Hamburg, and Bremen. *American and Australian:* New York to Melbourne. *American-Indian:* New York to Calcutta.

Written Work.—On Map of the World locate the ports named above, and draw the steamship lines between New York and these ports.

34. Our Foreign Trade is increasing rapidly as the result of large crops and cheap transportation (XXIV and p. 68). The export of our manufactures has increased on account of their cheapness and excellence, which have caused a demand for them all over the world.

The sum of the exports and imports of a country is called its "total commerce." The difference between the exports and the imports is called the "balance of trade." When our exports are greater than our imports, the

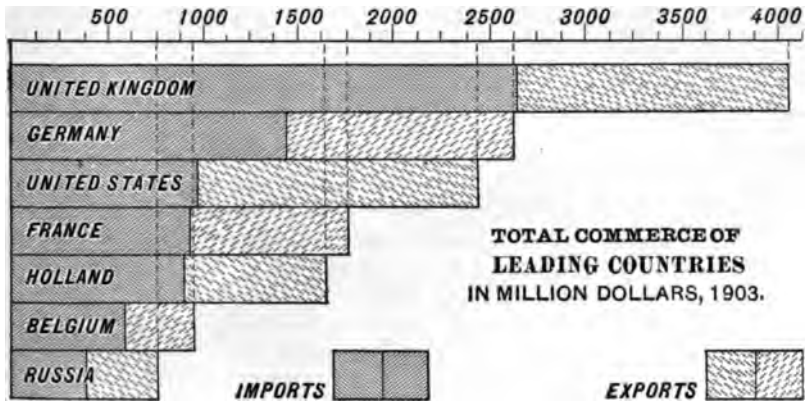


FIG. 22.

balance of trade is said to be 'in our favor' because then we *get* more money than we *spend;* but if our imports are greater, it is "against us." From Tables III, IV, find our trade balance for 1904. Is it against us or in our favor? Trade balances must be paid in cash by the nation against which they stand. No nation can afford to *buy* more than it *sells* unless it has other sources of income. Out of our large trade balance we pay over $100,000,000 annually to foreign ship owners for carrying our goods. We also pay many millions to foreigners who own stocks and other property in our country. If a nation should continue for many years to buy more than it sold, with no income from other sources, it would become bankrupt.

Besides cheap transportation there are two other things which may increase or reduce our foreign trade. These are the tariff laws and special trade agreements with foreign nations.

A tariff is a tax laid by the government upon imports. If this tax is high enough it may keep out imports altogether. The man who brings the goods in pays this duty, and adds it to the price of the goods when he sells them. At present our government lays a high tariff on things which we produce at home. This is to keep up the price of these goods and thus "protect" the home producer from being "undersold" by foreigners. Therefore this is called a "protective tariff." If the tariff is laid solely for the purpose of raising money for the use of the government, it is called a "tariff for revenue only." A country that levies no tax at all on imports is said to have "free trade." Many British ports, as Hongkong and Singapore, have entire free trade, while Great Britain and Holland are practically free trade countries, since a duty is laid on only a few articles for the sake of revenue.

Written Work.—From Fig. 22 write a paragraph on the commerce of the leading countries, giving, if possible, a reason for the balance of trade in each country.

35. Cities of New England.—Many things have caused villages, towns, and cities to grow up. Ferries, waterfalls, the crossing of lines of travel and trade, harbors, the mouths of rivers, sources of natural wealth, and places noted for healthful and beautiful surroundings, all offer opportunities for business and trade. Can you name some towns that owe their growth to one or more of these conditions?

Many small towns owe their prosperity to a single industry, but large cities usually have many industries which depend upon one another. Thus, textile factories support machine and repair shops and dyeing and bleaching establishments; blast furnaces give rise to steel mills, foundries, and hardware factories; while everywhere the grocer, butcher, tailor, shoemaker, and various tradesmen, supplying the needs of everyday life, have numerous shops and stores.

What advantages have the New England States for manufacture and trade (XXV, 2, 4, 6)? The New England cities had an early start in manufacturing, and the capital and skill acquired have enabled their wares to undersell the rest of the world.

What is the chief port of entry for New England (Table V)? What are the chief manufacturing cities (XXV–VI and Table II)? What do you know of the manufactures and commerce of *Boston* (XXVI and Table II)? How does it rank as a port of entry (Table V)? Compare its exports and imports. Compare it with New York as to number of ships. Compare the value of its manufactures with those of New York (Table II). It makes more clothing, books, and refined sugar than any other New England city, and is the leading wool, boot and shoe, and leather market of the United States. Through its port much grain, beef and pork are exported from the West, and into the port millions of tons of coal come for distribution through New England. *Gloucester* is the leading fishing port of the United States. Wooden vessels are built there. *Worcester* is an inland trade center, and ranks first in the country for the manufacture of wire. For what are *Lowell*, *Fall River*, *New Bedford*, and *Lawrence* noted? Describe the commerce and manufactures of *Portland*. It is an important port of entry. It has fine wharfs, warehouses, and grain elevators, and dry docks for ship-repairing. For what is *Bangor* noted? Much ice is shipped. Mention other manufacturing and commercial cities. What is the only harbor in New Hampshire? It has considerable coast-wise trade, and is a distributing center for coal. Name other manufacturing towns of the State. Name the chief cities of Connecticut. What do you know of *Providence?* It is a port of entry, and is the second city in New England in size and wealth. What are its chief manufactures (Table II)? It ranks first in the Union in jewelry, silverware, and worsteds.

Written Work.—1. On outline map of New England locate the chief manufacturing cities and write a fact about each. 2. Make a list of as many articles as you can that are made in New England.

36. Cities of the Middle Atlantic States.—On what minerals do the manufacturers of these States depend? How is the coast adapted for commerce? How are the seaports connected with the interior (XXVII, 5, 8)? What do you know of the commerce and manufactures of *New York* (XXVII, 2, and Tables II, III, IV)? It is the second commercial city of the world. Nearly half the foreign commerce of the country passes through this port, and its domestic commerce is many times greater. Why and how are goods reshipped here? What do you know of the manufactures of *Rochester* (Table II)? It is the third city in the State, and owes its importance to the Genesee Falls. The canal and railroad trade is large, as is also the lake trade through Charlotte on Lake Ontario. Describe the manufactures and commerce of *Buffalo* (Table II and XXVIII, 3). This is the second city in New York. About 1200 vessels enter and clear here annually. Compare with the trading vessels in New York harbor (Table V). Meat packing is the largest industry. The water-power of Niagara Falls is used in manufacturing. Name other important cities in New York. *Philadelphia* makes more carpets than all the rest of the country combined. It leads in woolens and leather. Why did it become a center for leather manufacturing (28)? What are the industries of *Pittsburg* and *Allegheny City* (Table II)? Pittsburg about equals Boston in the value of its manufactures. Over half of its products are iron and steel. Name other large cities of Pennsylvania. What manufacturing

cities in Delaware (XXIX)? Name the manufactures of *Newark* (XXVIII; Table II). Of *Jersey City*. Of *Paterson*. Describe the trade and manufactures of *Baltimore* (XXIX and Table II). Name other cities of Maryland; of West Virginia. What do you know of the manufactures of *Richmond?* It became a manufacturing city because of the water-power due to its location on the "Fall Line," but it now uses much coal. *Norfolk* is the largest peanut market in the world. What of *Portsmouth? Petersburg, Lynchburg and Danville? Roanoke and Newport News?*

Written Work.—1. Locate on outline map all cities named in this lesson. 2. Make a list giving the chief manufacturing industry in each city and the best reason you can for its being carried on there.

37. Manufactures and Cities of the Southern States.—The Southern States now manufacture a good deal of their own raw materials. These consist chiefly of cotton and its seed, forest products, sugar, coal, iron, and rice, with the addition of cattle products in Texas. Cotton goods is the largest manufacture. In this, South Carolina ranks first, North Carolina second, and Georgia third. But every Southern State, except Florida, makes some cotton goods. Some factories have moved from New England to the Southern States, to be nearer the raw material. Yarns and coarse grades of cloth are manufactured for sale to Eastern Asia. What do you know of naval stores? For sugar and iron, see XXXIII-IV.

Wilmington ships cotton and naval stores. *Charlotte* and *Raleigh* have cotton factories and cotton-seed oil mills (XXVI). At *Newbern* there is held, every February, a fish, oyster, and game fair. Name other important places in North Carolina. Give four chief cities of Tennessee, with their industries. Give four cities of South Carolina. The harbor of *Charleston* is naturally poor, but has been much improved by jetties. A fertilizer is made there chiefly from phosphate rock. Locate four cities of Georgia. *Savannah* ships enormous amounts of naval stores and supplies northern markets with early fruit and vegetables. *Atlanta* is the meeting point of several natural routes of travel, and is therefore called the "Gate City of the South." The railroads have followed these routes. *Augusta* is called the "Lowell of the South." Why (XXVI)? Locate four important cities of Florida. *Key West* and *Tampa* rank next to New York in the import and manufacture of Cuban tobacco. Locate the four chief cities of Alabama. *Mobile* imports fruit, sisal hemp, and rubber from Mexico and Central America, and ships coal, iron, and produce to Gulf ports. *Birmingham* is the center of the iron and steel industries, and has many furnaces, mills and factories. *Montgomery* has cotton factories, cotton-seed oil mills and has a large wholesale trade.

Locate four cities of Mississippi. *Meridian* is the chief manufacturing city of the State. It gets coal cheaply from Alabama, and raw materials for its manufactures from the cotton-fields, pine forests, and iron furnaces of the South. What cities engage in river, as well as railroad, trade? Locate four cities of Louisiana. *New Orleans* is the chief manufacturing city of the South. It is the greatest cotton market of the world. How does it rank in imports? In exports (Tables III, IV)? It is a great market for the fruit and coffee of South and Central America and the West Indies, and it exports sugar, rice, and barrel heads and staves. It is a point of transfer for the foodstuffs of the West, and the clothing and manufactured goods of the East. *Shreveport* is a railroad center, ships cotton and is an important distributing point for the surrounding country. Name other important places in Louisiana.

Locate five cities of Texas. *Galveston* ranks next to New Orleans as a cotton port. It was devastated by a great storm in 1900, and a great wall has since been constructed to protect the town from the sea. *Houston* is the chief railroad center of the State, and has a waterway to the Gulf. It exports quantities of cotton, and much lumber and rice. *Dallas* is the most important city of northern Texas. Its great manufacture is saddlery and harness. It is the seat of an annual state fair. *San Antonio* is a distributing point for southwest Texas and a favorite winter resort. *Fort Worth* is a shipping point for cattle, and has stock-yards and packing-houses. *El Paso* is the gateway from the East to Mexico and California. It has smelting plants where ore from Mexico, Arizona, and New Mexico is reduced.

Written Work. 1. Locate on an outline map the cities of the Southern States named above. 2. From Tables II—V, write a paragraph on the trade of the chief Southern ports.

38. Cities of the Central States.—What are the chief minerals of these states (XXXVI)? Vegetable products? Fisheries? What are their chief exports? The facilities for transportation? What are the industries of *Louisville* (XXXVII)? On what falls is it? Of what advantage is this? Coal, iron and lumber are easily brought to the city by water. What industries arise from this (23)? Louisville is the chief manufacturing city of Kentucky, and the leading tobacco market in the world.

Where are *Covington* and *Newport?* How are they connected with Cincinnati (XXXVII)? They manufacture tobacco, iron, steel, liquors, clothing, and packed meats. What do you know of *Lexington?* Name other important cities of Kentucky and their industries.

Where is Cincinnati? It is connected by canal with Toledo and Cleveland. In this way it obtains material for foundry and machine shops. It makes also much clothing, boots, and shoes. Why is the lake front where *Cleveland* is situated well placed for the manufacture of steel (23)? Electrical apparatus, sewing machines, and automobiles are among its products.

For what is *Toledo* noted? *Dayton? Akron? Columbus?*

Indianapolis has extensive foundries and machine shops, flour mills, carriage and wagon factories, and makes much malt liquor and furniture. For what is *Evansville* noted? It has a number of flour mills, lumber mills, and furniture factories. Name other chief cities of Indiana. For what is *Chicago* noted? It has enormous meat-packing industries, iron and steel works, furniture factories, carriage and car shops, and publishes many books. Cotton and woolen goods, silks and laces, and various other materials are brought from the factories of Europe and the Eastern States for use in the manufacture of men's, women's, and children's clothing.

Flaxseed is obtained in Michigan and Wisconsin for the linseed oil used in making paints and varnishes. Leather products, worth sixteen million dollars, are made annually. Name other manufacturing and commercial towns of Illinois.

Locate *Detroit*. What are its occupations and advantages? Foundry and machine shops are its chief factories. It manufactures almost five million dollars' worth of druggists' preparations yearly. It has also tobacco factories, and several large meat-packing establishments. Where is *Grand Rapids?* Its chief

industry is furniture making. There are over thirty factories. Where can they get their lumber (XXXIX)? Name other cities of Michigan.

What do you know of *Milwaukee?* Its chief products are from its foundries, although it is most noted for beer. Its leather products are worth over ten millions a year, and much flour is made. Name other important cities of Wisconsin. For what is *Minneapolis* noted? The annual products of its flour mills are valued at about fifty million dollars. The lumber products which rank next, are only one-fourth as valuable. These are the two great industries of the city. Name other cities of this State What are the cities of North Dakota? *Fargo* and *Grand Forks* lead in manufacturing, but their products are mostly for consumption within the State. What are the cities of South Dakota? Locate *St. Louis.* For what is it noted (XL)? It is the second greatest manufacturing city of the Middle West, although its products are only one-fourth as great as those of Chicago.

This is mainly due to its poorer connection with the Atlantic seaboard. The river is spanned at this point by fine bridges. Name other cities of Missouri. For what is *Des Moines* noted? It is in the center of a fine grazing region. What are other cities of Iowa? Where is *Kansas City?* The two cities of this name really form one center of population; their dividing line runs through the middle of a street. The great meat-packing establishments for which the cities are famous are on the Kansas side. Name other industrial cities of Kansas. Where is *Omaha?* With Council Bluffs and South Omaha it forms a railroad and trade center and shipping point for cattle. At South Omaha are great slaughtering and meat-packing industries.

Written Work.—1. Locate on an outline map the cities of the Central States, and state a fact about each bearing on its industries or trade. **2.** Compare the industries of the Central States with those of the Southern or New England States.

39. Cities of the Rocky Mountains and Pacific States and Territories.—What are the physical features of these sections? Their chief products? Some of the cities are built where they can supply food, clothing and tools to mining regions, and smelt or refine the ores from the mines. Some are built near forests, or on salmon streams, and are engaged in lumbering or fruit canning. Which are built near the coast? In what industry may they be engaged? Which are on great transcontinental railroads? For what region is each a distributing center?

Albuquerque is a railroad center. On what system (map)? For what is it noted (XLI)? Locate *Denver.* What are its industries? It is the financial center of the mining district of Colorado. The making of iron and steel goods for use in mining processes is its largest industry. There are abundant coal and iron at hand. Flour, books and paper, cars and carriages are among the varied manufactures of this city. On what river and what railroads is *Pueblo?* What are its industries? It is near enough to coal, iron, and petroleum to enable it to smelt the lead ores of the region advantageously. Locate two other mining centers of Colorado. Where is *Cheyenne?* It is a shipping point for cattle. Name other cities of Wyoming? Where is *Helena?* It is in a rich mineral region. Describe *Butte* and *Anaconda* (XLI). Name other cities of Montana. What are the cities of Nevada? Name three cities of Arizona. *Tucson* reduces silver and copper ore. Locate two cities of Utah. Why are they so near each other? On what railroads are they? Locate two cities of Idaho.

Where is *San Francisco?* For what noted? It has a fine, deep harbor, and is the center of much trade. Its exports go chiefly to Asia; its imports also come from Asia and from Hawaii. It sells the wheat, lumber, flour, canned salmon, fruit, and meat of the Pacific region, and brings tea and silk from China, coffee from Central America, coal from Australia and British Columbia, and sugar from Hawaii. Seal furs are brought here from the Alaskan waters, to be shipped to London for dyeing. This city makes one-half the goods manufactured in the State. Sugar is refined, beer, leather, boots and shoes, tobacco, soap, books and many other articles are made.

For what is *Portland* noted? It manufactures flour and lumber. Jetties have been built at the mouth of the Columbia River, so that Portland is really a seaport. It has much coastwise trade in flour and lumber. Here are important shipbuilding plants. Where is Salem? It has flour and wool mills. Locate *Tacoma* and *Seattle.* They are, next to San Francisco, our chief seaports on the Pacific coast. What railroads terminate at Seattle? Fish-canning is an important industry, both here and at Astoria.

TABLE II

THE TWENTY-FIVE LEADING MANUFACTURING CITIES OF THE UNITED STATES, THEIR FIVE LEADING INDUSTRIES AND APPROXIMATE VALUE OF PRODUCTS IN MILLION DOLLARS. CENSUS OF 1900.

CITIES	LEADING INDUSTRIES AND VALUE IN MILLION DOLLARS	VALUE OF ALL INDUSTRIES
New York	Clothing (206), Castings and Machinery (41), Tobacco (38), Beer (39), Books and Papers (26), Coffee and Spice Roasting and Grinding (21)	$975,000,000
Chicago	Meat Packing (249), Clothing (46), Castings and Machines (45), Agricultural Implements (25), Iron and Steel (32), Cars and Carriages (23), Books and Papers (19)	889,000,000
Philadelphia	Castings and Machines (38), Woolens and Worsteds (34), Carpets and Rugs (22), Leather (18), Beer (13).	603,000,000
St. Louis	Tobacco and Cigars (26), Malt Liquors (12), Meat Packing (12), Castings and Machines (12), Clothing (9), Cars and Repairs (8)	234,000,000
Boston	Sugar (16), Clothing (12), Books and Papers (10), Castings and Machines (9), Beer (8)	206,000,000
Pittsburg	Iron and Steel (97), Castings and Machines (11), Electrical Machines (14), Beer (4), Books and Papers (3).	203,000,000
Baltimore	Clothing (20), Tobacco (10), Canned Goods (8), Castings and Machines (6), Meat Packing (5)	161,000,000
Cincinnati	Clothing (14), Castings and Machines (12), Boots and Shoes (9), Distilled Liquors (9), Beer (6), Tobacco (5)	157,000,000
Cleveland	Iron and Steel (30), Castings and Machines (15), Meat Packing (8), Beer (4), Kerosene (3)	136,000,000
San Francisco	Sugar (11), Castings and Machines (8), Meat Products (5), Clothing (5), Flour (4)	133,000,000
Newark	Leather (11), Beer (8), Jewelry (7), Castings and Machines (6), Books and Papers (3)	127,000,000
Milwaukee	Castings and Machines (15), Beer (14), Leather (10), Iron and Steel (7), Flour (6)	124,000,000
Buffalo	Meat Products (10), Castings and Machines (7), Cars and Carriages (6), Linseed Oil (6), Soap and Candles (4)	122,000,000
Minneapolis	Flour (40), Lumber (15), Castings and Machines (3), Linseed Oil (2), Brick and Stone (2)	111,000,000
Detroit	Castings and Machines (9), Tobacco (6), Drugs (5), Iron and Steel (4), Meat Products (3)	101,000,000
Providence	Worsteds (17), Jewelry (13), Castings and Machines (9), Silverware (4), Cotton Goods (3)	88,000,000
Kansas City	Meat Packing (23), Soap and Candles (1), Castings and Machines (.66)	83,000,000
Louisville	Tobacco and Cigars (14), Cotton-seed Oil and Cake (5), Meat Packing (4), Castings and Machines (3), Leather (3)	79,000,000
Jersey City	Tobacco (6), Meat Packing (6), Soap and Candles (2), Cars and Carriages (3), Chemicals (2)	77,000,000
Rochester	Men's Clothing (11), Boots and Shoes (7), Castings and Machines (4), Flour (3), Tobacco (3)	69,000,000
Indianapolis	Meat Packing (13), Castings and Machines (6), Flour (4), Carriages and Cars (4), Furniture (2)	69,000,000
New Orleans	Sugar (23), Bags (3.4), Rice (Hulled) (3), Castings and Machines (2), Clothing (3)	64,000,000
Allegheny City	Iron and Steel (8), Castings and Machines (6), Pickles and Preserves (3.4), Meat Packing (4), Beer (1)	54,000,000
Worcester	Castings and Machines (8.5), Woolens (1.5), Wire (1.5), Boots and Shoes (1.6), Envelopes (1)	53,000,000
Paterson	Silk (26), Castings and Machines (6), Beer (2), Shirts (1), Meat Packing (1.3)	52,000,000

ate *Sacramento*. It is the chief city in a long valley, which forms the y of the State. The city manufactures considerable flour. Locate *ngeles*. The electric power used in this city is generated by a water- hty miles away. Where is *Alameda?* It is in an orange-growing re- Canned fruit and flour are exported. Name other cities of the Pacific

ten Work.—Locate on an outline map the cities named in this lesson, and me fact about each bearing on its industrial importance.

ıer Countries of North America.

Canada.—What are the surface features of Canada (map,)? The climate (XX, XLIV)? The chief resources? ndustries? With what nations is commerce carried on? are the chief Canadian trade routes? By what routes Canada trade with this country (p. 70)? With Europe? Asia? Name the chief mineral products and tell where is found; the products of herding; farming; forestry; ; hunting. In 1894 nearly a million fur-bearing animals caught, but the product now is not half so great. The factures consist chiefly of flour, leather, lumber, and alcohol. a makes more cheese than any other country in the world. , beer, cane sugar, cotton cloth, and farm tools are made me use. What raw materials used in these manufactures u sure that Canada imports? Give reasons. From Fig. te the chief occupations of Canada; the least important.

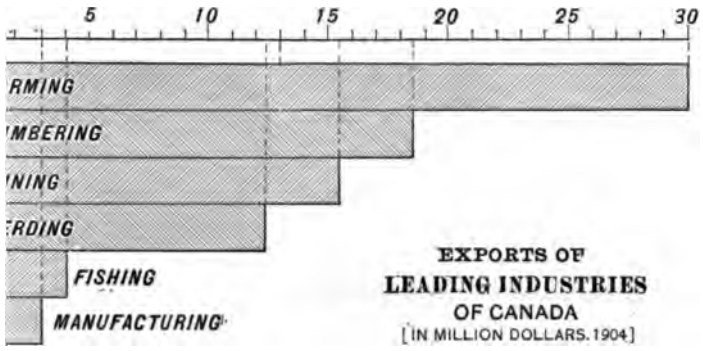


Fig. 23.

are with Fig. 1. In what are the industries of the two ies alike? How do they differ? Name the chief cities of a, and tell for what each is noted.

n Fig. 29 describe the trade of Canada with the United States. What terials do we buy of her? Can you tell why Toronto imports our coal British Columbia exports coal to us? Would cost of transportation ex- ? Why does Canada buy more goods of us than of Great Britain? oes she sell Great Britain more wheat than she does to us?

tten Work.—1. From Fig. 29 write a paragraph on our trade with 2. On outline map of North America write our exports to and our imports nada as shown in Fig. 29.

Mexico (XLVI).—Give the location of Mexico; its al features; its climate. What are its mineral products? l? How does Mexico now rank in silver production? out from Fig. 25 her share of the world's production. the vegetable products of its several regions. The coffee xaca (wä-hä'-kä) ranks with Mocha and Java. From Fig. e the three chief industries. How does manufacturing Compare the industries of Mexico with those of the d States and Canada (Figs. 1, 23, 25). As in Canada, the manufactures of Mexico consist of the necessities of life. They are generally of rude workmanship. One-third of our exports to Mexico consists of mining machinery and explosives. What railroad lines connect the United States and Mexico (p. 67)? Vera Cruz and Tampico are connected with our leading Atlantic ports by steamship lines which carry the greater part of the trade. Name these lines and tell which of our ports they enter (33). Find Carmen. It is the shipping port for the sisal hemp of Yucatan, our chief import from Mexico. Study Tables III and IV for the articles of our trade with Mexico. Most of the mining, railroading, and foreign trade, in Mexico, is in the hands of Americans or Germans. This is due to the enterprise and engineering skill of the Americans and to the efforts of German merchants to extend their trade. What is needed to build railroads?

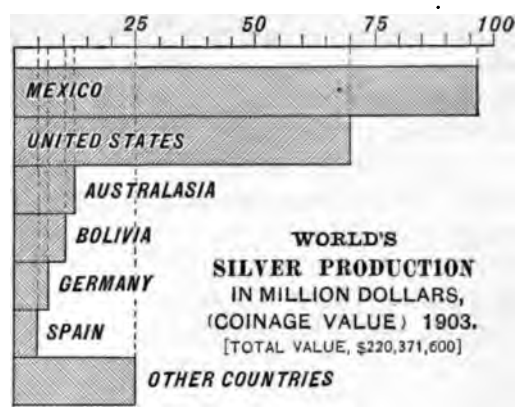


Fig. 24.

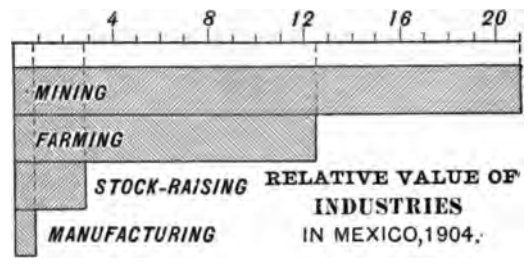


Fig. 25.

Written Work.—1. Consult Fig. 29 and give the best reasons you can why certain things are exported and others imported. 2. On an outline map write our exports to Mexico and our imports from that country; locate the chief seaports.

42. Central America (XLVII).—Locate Central America. Describe its surface; climate. Compare with Mexico. What are its mineral resources? Vegetable? The low plain on the east yields tropical fruits. The interior is mostly forested. Name the forest products. A medicinal gum called "balsam of Peru" is also found. The high western coast contains the plantations and farms. What are the chief farm products? Wheat, corn, cattle and sheep are produced in the higher tablelands, but not enough for the home demand. Name the states of Central America and the form of government of each. The people are entirely engaged in agriculture and mining, but the mines are little developed because transportation is poor. The people lack education, and are frequently engaged in civil war; manufactures are backward. What are the chief exports (XLVII)? The trade is chiefly controlled by foreigners.

Our largest import from Guatemala, Costa Rica, and Salvador is coffee; from Honduras and Nicaragua, bananas and mahogany. From trade map, Fig. 29, name our exports to Central America. The building of the canal has increased our trade with Panama. What are our other imports from that country? What does our trade show with regard to the industrial development of Central America?

Written Work.—1. On an outline map of Central America locate the chief seaports and steamship lines entering them, and write the exports and imports carried as in Fig. 29. 2. Write a paragraph on the republic of Panama and our interests there.

43. The West Indies.—Describe the location of these islands; their size; divisions; surface (map, p. 19); climate (p. 75). Which are independent? To whom do the rest belong (XLVIII)? From Fig. 27 name their chief products and describe their trade with us. These islands are almost entirely agricultural. The sugar industry is more important than all others combined. So much attention is given to it that food crops are neglected, and the islands depend on the United States, Canada, and South America for flour and meat. Compare the density of population in the West Indies and our country (Table VI). In the more thickly settled parts of our country and of Europe, wealth is great. This is not true in these islands. In 1899, sixty-four per cent. of the people of Cuba could not read. What bearing may this have on prosperity? Exports from Cuba have doubled since her independence. What trade-routes do you know from these islands (pp. 124–5 and 33)? Little attention has been given to road-building, and only the regions near the coast are developed; the farmers in the interior of Cuba and Porto Rico raise only enough fruit, vegetables, and grain for their own needs.

Since the independence of Cuba and the acquisition of Porto Rico by the United States, railroads have been begun which will connect all the leading towns on each island and make a continuous circuit of the coast. Highways also are being built and streams bridged in order to connect the rich interior regions with these roads. What do you know of Cuban tobacco (13)? From map, Fig. 27, describe our trade with the West Indies.

Written Work.—1. Write a paragraph on the industries of the West Indies. 2. Compare West Indian products with those of the United States. 3. Explain how our trade depends on the difference in climate.

44. Sugar.—The English-speaking peoples use about half of the world's supply of sugar. In the United States the average consumption is about seventy pounds a year for each person. Sugar is made chiefly from sugar cane and the sugar beet. The juices are extracted and boiled, and the sugar is allowed to crystallize. This gives "raw sugar" and molasses. The raw sugar is then "refined" or whitened.

FIG. 26.

The countries that produce raw sugar are seldom the ones to refine it. Hawaiian sugar is refined in San Francisco, Cuban sugar in New York and New Orleans, and East Indian sugar in Holland. The reason for this is that the process of refining is a complicated one requiring expensive machinery. Molasses is also made from corn, from potato-starch, and from sorghum, an inferior sugar cane. In European countries the sugar grower is paid a small bounty by government. How would this affect production? The *refuse* beet is good food for cattle, while the refuse *cane* is burned. Many countries that formerly raised sugar cane at a profit have been forced by the competition of beet sugar to raise other crops. As the sugar beet can be more cheaply grown than cane in the countries that consume the sugar, the cane sugar grower is at a disadvantage, since his product must pay the cost of transportation.

Written Work.—1. Using *Figs. 26 and 32*, write an account of the production of sugar, telling in what countries and climate the sugar beet also where sugar cane is grown—countries, and climate. 2. On map of the show by color or shading the countries producing beet and cane sugar.

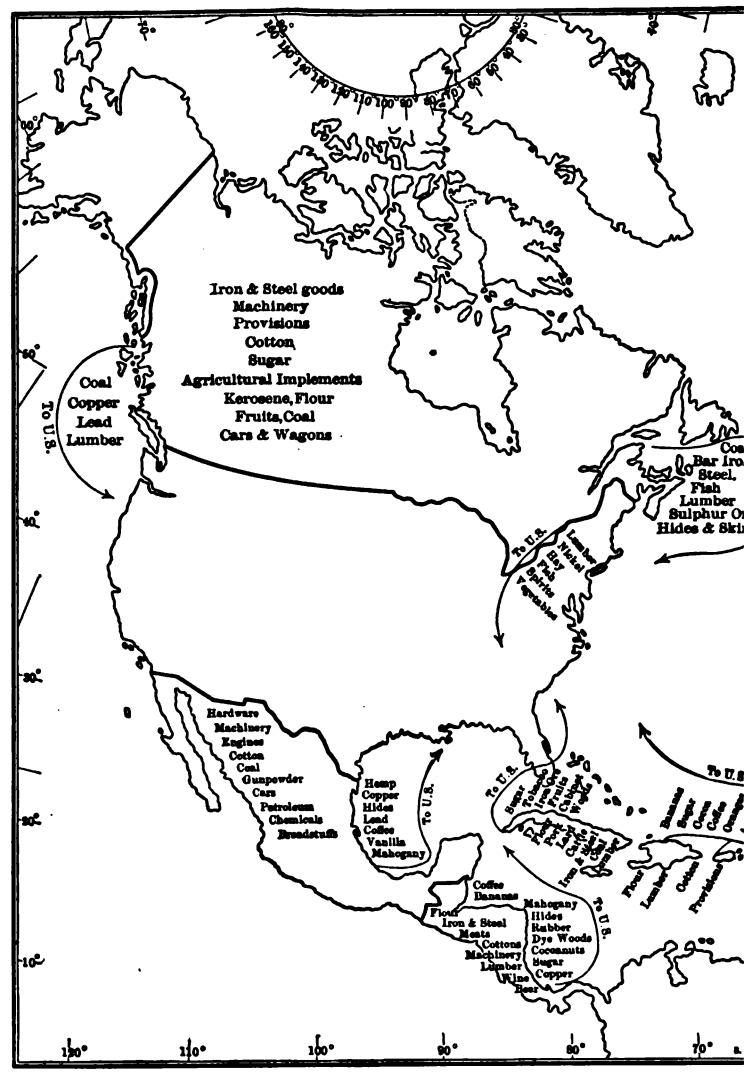


FIG. 27.—TRADE OF THE UNITED STATES WITH OTHER COUNTRIES OF NORTH AMERICA EXPORTS ARE PLACED IN THE COUNTRY BUYING THEM. OUR IMPORTS ARE PLACED NE BORDER OF THE COUNTRY THAT SELLS THEM. EXPORTS AND IMPORTS ARE NAMED IN O THEIR VALUES.

Review of Our North American Trade.—Which par this continent are largely unproductive? Why? Compar trade with the tropical part of the continent with our trade the cold part. Name products obtained from each se What products do we obtain from the western part of Ca The eastern part? The central part? What are the me transportation in each case. If instead of the Great Lake the St. Lawrence River, a high range of mountains sepa Canada and the United States, how do you think the between these countries would be affected? What countr Europe can you name that are separated by mountains? Asia? Do you know what effect this separation has ha these countries? Judging from the map, what do you thi the importance of our eastern coasting trade? What gooc sold to Mexico? From what part of our coast would th sent? What goods are received at our southern ports (IV)? How do you think the Panama Canal will help the of the western coast of North America? How will it hel West Indies?

EUROPE.

. **Physical Features; Resources.**—How do the United
es and Europe compare in size? In latitude? In climate?
' do you explain the difference in temperature (LV, 4)?
the United States, Europe has abundant rainfall. It is
ght by westerly winds and decreases with distance from the
n until in southeastern Russia the soil is nearly barren from
of rain. How does the direction of mountain ranges affect
'ainfall of Europe? What mountains separate central from
hern Europe? Effect on trade (LVIII)? In the Mediter-
an countries there is little rain except in winter. Hence,
essful farming depends upon irrigation.

e deeply indented shores of Western Europe give nearly every country
o of sea-coast. What countries have no coast line? How is commerce
ed by coast line? The rivers of the Great Plain are navigable. Why
;? Name the rivers valuable to commerce. What countries do these
help? Turn to physical map of Europe and point out the chief farming
ns; the mineral regions; the grazing regions; the forests; the fisheries.
: the plants of northern Europe; of southern Europe. To what indus-
do some of these plants lead? How does climate affect industries in
eastern Europe? In southern Europe? In western Europe? A moist
te favors agriculture and the making of textiles (48).

itten Work.—1. On an outline map of Europe draw the chief rivers and
ain ranges. 2. Locate the mineral products. 3. The vegetable products.

. **Races; Governments; Civilization.**—The people of
pe and of North America are almost entirely of the white
What exceptions are there? Europe, though little
r than the United States, includes twenty different nations,
having its own government and language. Which are abso-
monarchies? Limited monarchies? Republics? How
western Europe compare with eastern Europe in wealth,
ıfactures, education and trade?

production and trade Europe ranks first among the continents. We
ivide it according to races and industries into three sections, western,
n, and southern Europe. Western Europe is inhabited mainly by the
nic, the most progressive of the races. It includes Great Britain,
e, Austria, Germany, Switzerland, Holland, Belgium, Norway, Sweden,
enmark. These nations are marked by density of population, great manu-
ing interests, and extensive trade. Southern Europe, including Spain,
gal, Italy, Greece, and Turkey, is chiefly agricultural, producing fruits,
oil, and silk. The people are mainly of the Latin race. Eastern Europe
es Russia, Hungary, Servia, Roumania, and Bulgaria. Farm crops and
are the chief products, and the ruling people are, except in Hungary,
Slavonic race. From a study of the following table you will see
seems to be the relation between intelligence and trade.

SECTIONS.	POPULATION PER SQUARE MILE.	VALUE OF FOREIGN TRADE PER PERSON.	CANNOT READ NOR WRITE.	SUPPORTED BY THE STATE (PAUPERS).
rn Europe.....	340	$120	5%	3%
rn Europe.....	130	15	65%	15%
n Europe.....	110	12	70%	10%

FIG. 28.

stern Europe can support a large population because it has many
ries which give employment to thousands of people. Southern and
n Europe, where there are fewer profitable occupations, furnish the
of the immigrants that come to America. Remembering that manu-
facturing is most expensive in western Europe, we may learn from Fig. 30 that there is more wealth and intelligence, and less poverty and ignorance in manufacturing and commercial countries than in those that are mainly devoted to farming and herding.

Written Work.—1. On outline map of Europe write in each country its race and leading industry. 2. Write a paragraph comparing Russia and France in regard to government and industries. 3. Compare Belgium with Italy as to industries, referring to natural resources and climate as causes of difference.

47. The United States and Europe.—British trading companies established the first English colonies in America and developed the country in the interest of commerce (see London and Plymouth companies, U. S. histories). But in those days the British Government thought only of its own interests. "The only use of colonies," said one Englishman, "is to furnish freight for our ships and a market for our goods." Manufacturing in the colonies was forbidden, and trade allowed with England only. In this way a dispute grew up over production and trade which led to the Revolutionary War and the independence of the United States. Long after the Revolution, this country remained dependent on Europe for manufactured goods, exchanging for them lumber, fish, tobacco, and indigo.

The wars of France and England and their interference with our seamen led to the War of 1812. Our victories in this war secured respect for our flag and safety for our ships. The interruption to trade caused by war led to an increase in home manufactures. The invention of the cotton-gin had already led to the export of cotton, and the building of railroads and canals that opened the Mississippi Valley to trade led to the exporting of grain and meat to the overpopulated manufacturing countries of Europe. These still form half our exports, being worth over seven hundred million dollars a year. Our export of manufactured goods has, however, continually increased. In 1820, 7½% of our exports were manufactures, in 1904, 32%. Owing to labor-saving machinery and skilled workmen much of our manufacturing is conducted at less cost than in European countries. This enables us to pay high wages, and yet produce cheap goods.

While we were spending our energies in opening up new lands and in developing railroads most of our manufactures were consumed at home, and we cared less about trade with foreign nations. But now that we are beginning to export more manufactures, we are coming into competition with European merchants in Asia, Africa, and South America. Moreover, our possessions in the Pacific and the West Indies bring us into closer relations with the nations of Europe. There is increasing travel between the old world and the new, due to improvement in steam navigation. More people go every year from New York to England than from New York to San Francisco, and the cost of the journey is less. Five-sevenths of our exports are sent to western Europe, and half of our imports are bought there. The great manufacturing cities there buy raw materials for their factories and food for their people from us and sell to us many of their manufactures. Thus our commercial and political relations with the people of Europe are very close.

Written Work.—Make a list of our manufactures exported to Europe (Table III).

48. The United Kingdom.—Of what commercial advantage to Great Britain are the following: location? numerous estuaries, or sunken river valleys, along the coast? a mild and moist climate? (such a climate favors textile industries, as all fibers are more easily spun when slightly damp); vast deposits of coal and iron? numerous colonies in every part of the globe? Until recently, Great Britain was the chief manufacturing nation of the world. Which nation is first now (Fig. 9)? England was the first of modern nations to make iron and steel. The first modern ship-canal was made in England. The spinning machine, power loom, the steam engine, and locomotive were first made there. Being the first great manufacturing nation and having many ships and colonies, Great Britain secured a large part of the

world's trade and still holds it (LVI). What is the character of the British people (LVI, 3)? Find four cities located in the coal fields of Great Britain. What are their industries? In what parts of the country are the agricultural industries? What are

FIG. 29.—INDUSTRIAL MAP OF THE BRITISH ISLES.

the leading crops and animals? Where are the fisheries? What kinds of fish are found? What manufactures are produced in Ireland? What cities are engaged in ship-building?

Compare the shipping of Great Britain with that of other countries; the railroads; the iron and steel product; exports; imports. How does the balance of trade stand? More than half the commerce of the world is carried by British vessels. The money which England receives for this helps to offset the trade balance against her. Besides her manufactures and trade Great Britain has valuable fisheries and is, according to size, a great farming and stock-raising country.

Written Work.—1. On an outline map of the British Isles locate chief seaports and steamship lines entering them (p. 93). 2. On an outline map of the world show by color or shading the British colonies.

49. Manufacturing Cities of the United Kingdom.—These are grouped largely in the various coal-producing regions. Locate *Newcastle*. It is the chief city of the northern coal field. What are its manufactures? Find *Sheffield* and *Leeds*. Of what industries is each the center? Find *Manchester*. A ship canal from the Mersey makes this city a port. Of what industry is it the center? What is that mining field called which includes *Birmingham* (LVI, 12)? For what is it noted? Near Birmingham is a region called "The Potteries" because of the earthenware and china made from the clay found in the neighborhood. Find *Cardiff* in Wales. It is the chief of a group of cities using the coal of the region to feed iron and copper furnaces, and leads in the export of hard coal. Find *Glasgow*. The coal fields of Scotland supply its furnaces and the ship-building works on the Clyde. Several British cities are noted for special products, as *Nottingham* for lace, *Paisley* for shawls, *Belfast* for linen, *Worcester* for china, and *Bradford* for broadcloth. *London* imports and distributes more goods than any other city, but its exports are comparatively small. Why is this? Locate *Liverpool*. What is its commercial rank? Its harbor is kept open at great cost. Its trade is chiefly with America and West Africa. Foods and cotton are imported, and the goods and machinery made in the great factories of northern England are exported. The harbor of *Glasgow* consists of basins and docks built along the Clyde. This city imports ore and raw material, and sends out ships, iron and steel, glass, and other manufactures of the Scottish mills. *Newcastle* exports machinery and coal. Why (Fig. 31)? Locate *Hull*. The cotton and woolen goods of the northern mills are sent from here to the continent of Europe. There is considerable cross-channel trade with the continent of Europe from *Dover* and *Southampton*. American and South African vessels land passengers for London at these ports. *Queenstown*, in Ireland, is a station for American mails.

Written Work.—1. From tables III and IV make a map showing our trade with the United Kingdom (See Fig. 27). 2. Locate on an outline map the chief manufacturing centers of Great Britain and Ireland and write under the city the name of the chief industry of that place.

50. France.—(Review Map Studies, p. 99). Describe the position, size, surface, and climate of France. Why is France better located than England for trade with the East? What are its chief agricultural products (Fig. 30)? What section is noted for horses? The north of France produces breeds of horses famous for size and strength. They have been introduced into all civilized countries. France has long been noted as a fruit-growing country. The farms are small and carefully cultivated. The French farmer is skilful in the production of new varieties of pears, apples, peaches, and grapes. In wine France surpasses all other countries. What others rank high (Fig. 33)? From what countries do we import wine (Table IV)? What other beverages obtained from fruits are produced in France? In what parts are cattle and sheep chiefly raised? The chief iron and steel works are at St. Etienne, where coal and iron occur together. In what other region is coal found? To other centers iron ore is imported from Belgium, Spain, and Germany. Coal comes from Cardiff. Salt mines are worked near Nancy, and building stone, cement, clay, and phosphate are found. The fine clays of central France give rise to the pottery industries of Limoges and Sèvres. "Plaster of Paris" is a well known white cement. How does France rank in manufactures (Fig. 19)? France leads the world in the production of high grade and brocaded silks. The process of making brocaded silk by machinery was invented by a Frenchman of Lyon named Jacquard, and is well known as the "Jacquard" loom. French goods bring a high price because of their artistic workmanship.

A pair of ladies' shoes from Paris, a dress, a hat, a piece of jewelry, or a vase may sell for ten times as much as the same article produced elsewhere. Transportation within the country is mainly by means of rivers and the numerous canals connecting them. How does France rank in railroad mileage (Fig. 20)? In shipping (Fig. 21)? Compare the value of her exports and imports (Table VI). What does she buy from us? Sell to us (Tables III, IV)? Havre is the chief port of entry for American goods.

FIG. 30.—INDUSTRIAL MAP OF FRANCE.

Fine cloths, wines, millinery goods, and articles of luxury are sent to America through this port. Cabinet woods from Central America, coffee, cocoa, metals from South America, and coal from Wales are also brought to Havre. Marseilles is the second important port. Its trade is largely with eastern countries and Africa. Wheat from Russia, raw silk from Turkey and Central Asia, cotton from India and Egypt, wool, hides, and skins from Africa are brought into the port of Marseilles.

Written Work.—1. On outline map of Europe locate the chief ports and manufacturing cities of France and write under each its chief product. 2. On a similar map indicate trade with the United States, as in Fig. 27.

51. Belgium.—What part of Europe does this country occupy? What do you know of the population and industries of Belgium (LXII)? What harbor and what navigable rivers has it? What natural wealth favors manufacturing? Belgium produces more manufactured goods per person than any other nation in the world. For what is Liege noted? Ghent? Bruges? Brussels? Ostend (LXII)? Belgium was the first of modern European countries to make woolen cloth, and still leads in this industry. It has, next to Ireland, the finest facilities for making linen. The water of the river Lys is well adapted to the bleaching of flax, and the dense population of the country furnishes the labor needed. This flax is made into fine laces, linens, lawns, and cambrics. Hand-made lace requires much labor. In the city of Mechlin, over two hundred thousand women and girls are lace-makers. What are the total values of Belgium's exports and imports (Table VI)? What part of her trade is with us (Table VI)?

Written Work.—1. On outline map of Central Europe already begun, write our exchanges with Belgium. 2. Make a list of the leading manufactures of Belgium and a city noted for each.

52. Holland and Denmark are the lowest and flattest countries in Europe. For what products are both noted (LXII, 1, 6)? Holland is also noted for its colonial possessions and extensive commerce. Describe its colonies (LXII). Dutch ships distribute colonial products all over the world, and do a large carrying business for other nations. Why is transportation easy in Holland? Smooth wagon-roads paved with brick intersect the country. Railroad building is easy, but many bridges must be built. Why? On account of cheap transportation Holland imports and forwards goods from her ports to the countries of Central Europe. The winds are a great source of power. What use is made of them?

Holland has no coal, iron, or other metals. What effect does this have on her industries? Building materials and timber are also lacking. Brick, tile, and earthenware are made in abundance. Butter, cheese, meat, and oleomargarine are leading exports. Besides jewelry and diamonds we buy from Holland tobacco, tin, fish, hides, and cheese. Where do you think she produces each of these?

Denmark produces and exports mainly milk, butter, and cheese. Beef, cattle, horses, wool, and eggs, are also sold. What is the value of our imports from Denmark? Why so small?

They consist chiefly of hides, wool, and rennet, a substance used in cheese-making. We sell to Denmark oil-cake, grain, flour, cotton, and kerosene. Manufacturing is little developed on account of a lack of minerals. Flour, beet-sugar, and liquors are made, and Copenhagen builds ships out of Norway lumber. The most careful attention is given to butter-making,

FIG. 31.—INDUSTRIAL MAP OF BELGIUM AND THE NETHERLANDS.

There are over one thousand steam factories, where it is packed and salted to meet the demands of all markets. Enormous quantities are exported. Great Britain and Germany are the largest buyers of Dutch and Danish articles of food.

Written Work.—1. On outline map of Europe write our exports to Holland and Denmark, and the things we receive from them. **2.** On a similar map locate ports, manufacturing cities, and the chief products.

53. **The German Empire.**—(Review Map Studies, p. 99, and LXI.) What is the surface of Germany? Its climate? Mineral resources? Its rank in production of coal? Iron and steel? Copper? Silver? What are its agricultural products (Fig. 33)?

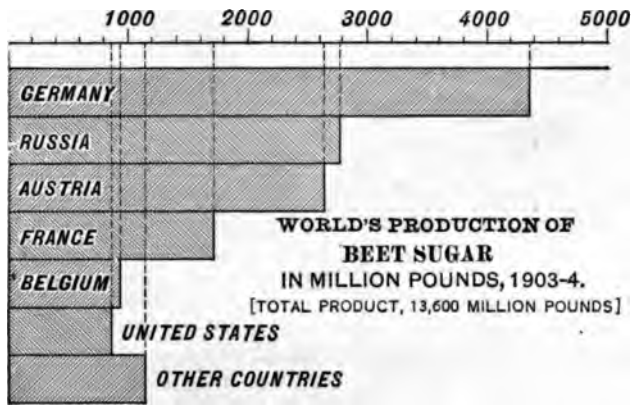


FIG. 32.

A naturally poor soil in most of the empire has been made very productive by skilful farming, and yet she does not produce enough food for her people. How does Germany rank in the production of wheat? Rye? Oats? Barley? Sugar? Lumber (Figs. 2–6, 36)? Potatoes and rye bread form the chief food. The "black bread" of the German peasants is made of rye flour. The larger part of the northern plain of Europe has a light, sandy soil, suitable for rye, though too poor for wheat. What is the rank of Germany in manufactures (Fig. 19)?

Next to the United States she has made more progress in manufactures than any other country. She sends us fine knives, scissors, and other cutlery, and we sell her agricultural machinery. Germany sends many hides and skins to us to be tanned, and imports shoes and shoe leather from us. Where is much tanning done in this country (Table II)? What are the chief manufactures of Germany? What German state is noted for woolen goods? For wines? What is the total value of her exports and imports (Table VI)? What part of her trade is with us (Table VI)? What are the chief articles of our trade with Germany (Tables III, IV)? What are the chief German railroad centers? Trace routes to Vienna, Paris, St. Petersburg, Constantinople, and Rome. Germany is connected also by canals and rivers with the neighboring countries with which the bulk of her trade is carried on. Many of these are owned by the government. What do you know of German canals (LXI)? Steamers go up the Rhine and by canal to the Rhone. From map, Fig. 35, tell what city is noted for pottery? Toys? Wine? Woolen and linen goods? Printing? What are the great German ports?

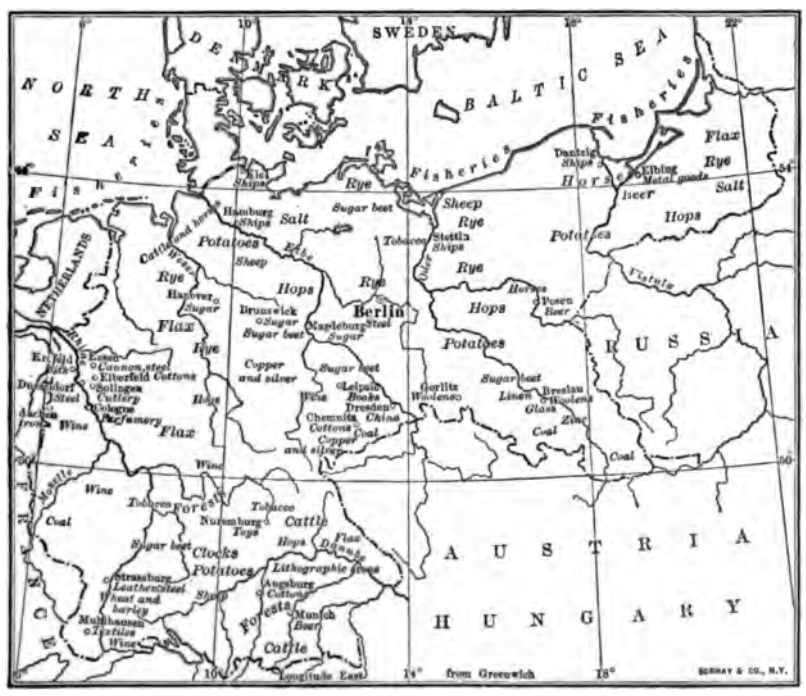


FIG. 33.—INDUSTRIAL MAP OF GERMANY.

Written Work.—1. From Tables III and IV, write on the outline map of Central Europe our imports from and our exports to Germany. **2.** On a similar map locate the chief German seaports, manufacturing towns, and a leading product of each.

54. **Switzerland** (Review LXIII) has to pay large sums of money to other countries for carrying her goods. Why is this? How does the surface of the country affect production? Next to Norway, Switzerland is the poorest farming country in Europe. She has few minerals. Hence manufacturing and dairying are the only profitable occupations. Transportation is well provided for. Fine wagon roads are built along the valleys and through the mountain passes. Several tunnels connect the country with Italy.

Swiss scenery is one of the financial resources of the country. Travellers spend over seventy million dollars there annually. The railroads earn over ten million dollars annually. One-third of the people are engaged in manufacturing. The products are noted for *quality* rather than *quantity*. No attempt is made to produce cheap goods. What cities are noted for silks (LXIII)? Thousands of hand looms in Zurich and St. Gall turn out the richest of silks, laces, and embroideries. Swiss muslins are sold all over the world. Geneva watches and engraved and enamelled jewelry command high prices. Straw braid for hats, wood-carvings, leather goods, fine machinery, and scientific instruments are other characteristic products. The Swiss maintain technical schools to train workmen for their factories. Besides textiles, we import cheese, clocks and watches, aniline dyes, and rennet from Switzerland, and sell her raw cotton, iron and steel goods, and chemicals. Swiss trade is mainly with her neighbors, France, Germany and Italy.

Written Work.—1. On outline trade map write our exports to and our imports from Switzerland. **2.** On a similar map locate manufacturing cities and the chief product of each.

55. **Norway and Sweden** are now distinct kingdoms. Describe the surface of these countries (LVII, 9). Less than one-twentieth of the soil of Norway and one-tenth of that of Sweden is fit for cultivation, thus the population is sparse. Half the Swedes and one-fourth the Norwegians are farmers, and yet the land is so poor that food has to be imported. Norway has more sailors and ships, according to her population, than any other country. Compare with other nations (Fig. 21). The numerous swift mountain streams furnish power for 5000 saw mills. The forests of Norway are nearly exhausted, but Sweden is the largest lumber *exporting* country in the world. The mining and manufacture of iron is the second largest industry in Sweden. Swedish iron made from charcoal is used for hardening steel. How does the country rank in this product (Fig. 17)?

The fisheries are very valuable, employing fifty thousand men. The harbor near the Lofoten Islands are, next to those of Canada, the most valuable fishing-grounds in the world. Manufacturing is not extensive. Coal

textiles, wood-pulp, and matches are the chief ones. The United States buys iron, wood-pulp and fish of these countries and sells them cotton, oil, breadstuffs, farm tools, leather, and tobacco. How does the balance of trade stand with them (Table VI)? From what source besides exports does money come into these countries?

Written Work.—1. Color on outline map of the world the lumber producing countries (Fig. 6). 2. Fill out on outline map of Norway and Sweden the exports to and imports from the United States.

56. Spain and Portugal (LVIII).—Describe the surface; climate; natural resources. The dry climate of Spain is due to the mountains that border the coast. Only the coast plains and river valleys are fertile. Agriculture in the central plateau region depends on irrigation. What are the mineral products? These are not much used in manufacturing, but are exported as raw materials to be manufactured in Great Britain, Germany, and France. Seventy-five per cent. of the people are illiterate, which helps to account for the backward condition of all industries in

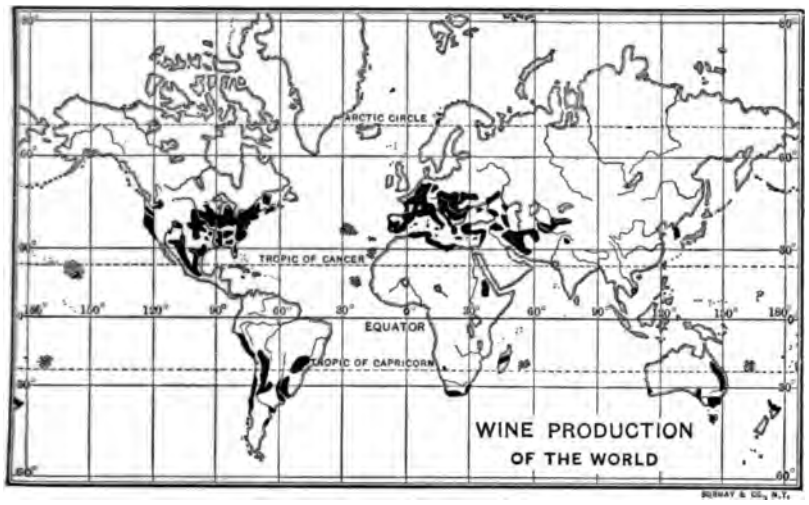


FIG. 34.

Spain. How does Spain rank in the production of barley (Fig. 34)? Wool (Fig. 45)? Coal (Fig. 11)? Spain is the largest iron-exporting country in Europe. In what part is the iron found (p. 87)? The port of Bilbao ships most of it? How do these countries rank in copper (Fig. 13)? What is the silver production of Spain (Fig. 25)? Besides cotton we sell to Spain chiefly tobacco, lumber, and kerosene, and receive from her cork, wine, fruits, nuts. pyrites, and licorice. From Portugal we receive cork, wine, argol, rubber, and cocoa. From what colonies might Portugal obtain the last two articles (LXXVIII)? Pyrites is an iron ore from which sulphur is obtained. Argol is a name given to the settlings of wine: from it important medicines are made. Our exports to Portugal are the same as to Spain. Compare the values of the exports and imports of each of these countries and find the balance of trade (Table VI).

Written Work.—1. On trade map write our exchanges with Spain and Portugal. 2. Locate on outline map of Europe the chief cities and ports of Spain and Portugal; tell what each city is noted for (LVIII).

57. Italy.—What does Italy comprise (LVIII)? Describe its surface. Its fisheries. What are the mineral products? Is there coal? What are its agricultural products? Much of the land is rich, but it is mostly owned in large estates, and does not produce food enough for the people. Many Italian peasants emigrate, large numbers coming to this country. The lack of coal is a drawback to manufacturing, yet cotton, silk and woolen goods are made in the large cities, fine glass at Venice, cutlery at Milan, straw goods at Leghorn, and coral jewelry at Venice and Florence. Venetian glass, Leghorn hats, and Etruscan jewelry are famous. Red coral is found near the west coast; its manufacture is an old Italian industry, amounting to many million dollars a year. What is the value of the foreign trade of Italy (Table VI)? How do her exports and imports compare? What is her rank in shipping (Fig. 21)? She sells more goods to her neighbors, Switzerland, Germany, and France, than elsewhere; these are chiefly raw materials and fruits. Describe her trade with us (Tables III, IV). We also buy of Italy sulphur, olive oil, cheese, straw braid, marble, and wine, and sell to her tobacco, lumber and kerosene.

Written Work.—1. Locate on map the chief Italian cities and write a statement about each. 2. On outline map indicate our trade with Italy.

58. The Balkan States take their name from the Balkan Mountains.—Locate *Greece* (LIX). Describe surface and coast. What are its natural divisions? Its occupations? Its chief exports? Greece imports about two-thirds of the grain and flour it uses. It buys coal of Great Britain, and petroleum of Russia. Of the United States Greece buys kerosene, cotton, and machinery, and sells us fruit, cheese, marble, licorice, and valonia (LIX). How do its imports and exports compare (Table V)? What is its chief port? What part do the Grecians take in the trade of the Levant (LIX)? They pay in part for their imports with the earnings of their ships. What other countries do this (48, 55)?

Of what does *Turkey* consist? What is the surface? Climate? Coast? Resources? What are the manufactures of Constantinople? Adrianople? Salonica? What is the value of its exports? Imports (Table VI)? What are its chief exports (LIX)? Our chief imports from Turkey are carpets, tobacco, hides, and opium. Find value from Table IV. We sell to her meats, cotton, steel, and leather. Value? What are its harbors (p. 89)? What is the "Golden Horn"?

There are very few schools in Turkey, and the government is bad. As the Turks have no such carrying trade as Greece, they have nothing to offset the excess of their imports over their exports, and the country is practically bankrupt. Constantinople is a famous market for oriental goods, especially carpets and rugs. Many merchants in America and Europe send buyers there every year.

Roumania, Bulgaria, Servia, Montenegro.—Locate these states (map, p. 98). Describe the surface of each (map, p. 87). What are the chief occupations in each? What are the products? Find the chief cities in each. These countries are now free from Turkey under whose rule they long suffered from bad government. They are improving in education and industries. Their trade is almost entirely with European countries. Yet, like Russia, they buy agricultural implements of us. Our imports from these states are almost entirely hides and goat skins.

Written Work.—1. Draw an outline map of the Balkan States and locate the chief ports, manufacturing cities, and productions. 2. On a similar map write our exports to these countries and our imports from them.

59. **Austria-Hungary.**—Locate Austria-Hungary (LXIII). What is its surface? Its minerals? Its agricultural products? Half the people are farmers. How does it rank in the production of wheat (Fig. 2)? Rye (Fig. 31)? Barley (Fig. 34)? Where is its manufacturing region? What are its chief manufactures? Locate the following cities and tell for what industries each is noted: Vienna; Prague; Gratz; Brunn; Budapest; Szegedin; Lemberg; Williczka; Berchtesgaden. Compare the imports and exports of Austria-Hungary (Table V). How does it rank in shipping (Fig. 21)? What is the value of its trade with us (Table V)? Its trade is almost entirely with northern Europe. It sells half its food exports to Germany, and buys one third of its imports there. The leading imports are cotton, coal, silk, wool, copper, and machinery. She sells to us flax, beet-sugar, glass-ware, beer, and hides, and buys raw cotton, copper, kerosene, and machinery. It has considerable trade with eastern countries, supplying the leading imports of Roumania, Bulgaria, and Servia, and handling their exports. What is peculiar about the government (LXIII)? The progress of the country is much hindered by the quarrels of different races forming the population.

Written Work.—1. On outline map of Central Europe place the chief cities and railroads of Austria-Hungary. Write a statement about each manufacturing city. 2. Write a paragraph comparing the industrial development of Austria-Hungary with that of Germany, giving reasons for the difference. 3. On trade map place our exchanges with Austria-Hungary.

60. **Russia.**—Where is Russia? What is its size (LVII)? Its climate? Its surface? Its mineral wealth? Animal? Vegetable? What are the chief pursuits of the people? Nine-

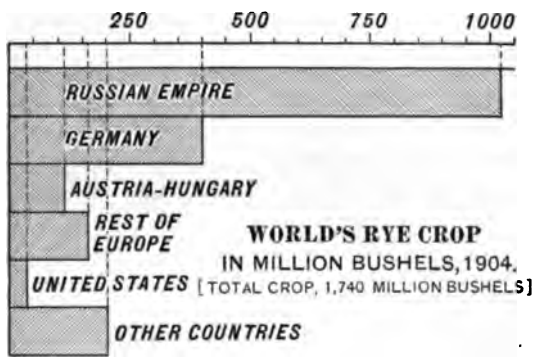


FIG. 35.

tenths of the people are farmers. Russia is the greatest grain-raising country in the world. (Compare Figs 2, 4, 35, 36.) The manufacturing is done mostly in a few large cities; it consists chiefly of cotton goods, articles of leather, wood, steel, clay, and paper, chemicals, tobacco, and sugar. Home manufacturers nearly supply the home market. What do you know of government and education in Russia? What are the peculiarities of its internal trade (LVIII, 3)? The trade of the country is mainly domestic. There is a high tariff on all manufactured goods for the purpose of encouraging home production. Our agricultural implements and machinery are admitted at a lower rate than other goods, to improve the farmer. Germany and Great Britain have about half the Russian trade. What is its trade with China (LVII, 6)? With what nation is its chief maritime trade? What are the amounts of its exports and imports (Table VI)? How do they compare? What is its trade with us? Russia sells us hides, wool, hemp, and flax, and buys cotton, copper, and farm

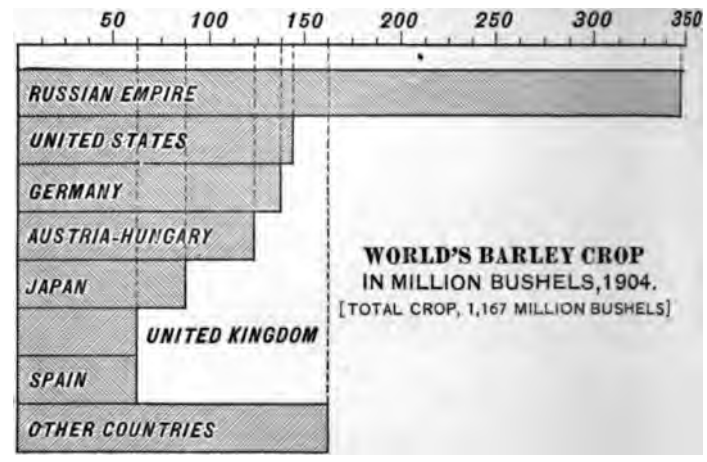


FIG. 36.

machinery, which is the best in the world (Table III). What is its chief commercial city (LVII, 8)? For what industries is Moscow noted? Warsaw? Odessa? Cronstadt? Kazan? Saratov? Archangel? Astrakhan? Riga?

Written Work.—1. On outline map of Europe write our exports to Russia and our imports. 2. Locate the chief cities and write a statement about each.

SOUTH AMERICA.

61. **Physical Features.**—(Review Map Studies, p. 76.) Compare the Atlantic and Pacific slopes as to extent and rivers. Which has the greater commercial advantages? Why? What products are brought down the Amazon? The Orinoco? The La Plata? How are goods transported from the Andes plateaus to the coast (LIII)? Which coast is more productive? Why? Compare the climates of the eastern and western coasts at the equator; at the tropic of Capricorn; at 10° South latitude. Account for the difference. Describe the climate of the Andes Highland; of the Selvas; of the Pampas. What is the effect on products?

Commerce is greatly hindered by natural impediments to transportation. Among these are poor harbors, mountain ranges cut by swift streams and gorges, unhealthy coast plains, and interior marshes.

Written Work.—1. On outline map of South America write the leading plants cultivated; the leading minerals. 2. On another map draw the navigable rivers, and name them.

62. **The People of South America.**—About 80% of the people of South America can neither read nor write. Most of the inhabitants of the interior are wild Indians. How does intelligence affect production? Why will an intelligent farmer raise more and better crops than an ignorant one? Name some occupations that ignorant laborers can not engage in.

The people of South America have republican forms of government, but ambitious leaders keep them disturbed by civil wars. In what ways does this disturb production? Good wagon roads are found along the coast, but in the interior the roads are chiefly mule paths. Numerous lines of railroad run from coast towns for short distances into the interior, but the great heart of the continent, except in Argentina, is still a wilderness.

The La Plata countries and Brazil have been greatly helped by foreign immigration and foreign capital. Nearly 2,000,000 Europeans have come to these countries during the last twenty-five years, and have built up important manufacturing industries. British, French or German capitalists control the more important railroads, mines, and the larger farming and stock-raising industries. What have you learned about the people of South America (L. 5)?

Written Work.—1. Make a list of the occupations that a person who does not know how to read and write cannot engage in. What does this show about the value of education? **2.** Write a paragraph on the races of South America.

63. Our Trade Relations with South America.—In our trade with the countries of South America we can see the effects of distance and of poor transportation. From Table VI find our share of the foreign trade of Venezuela; of Colombia; of Brazil; of Argentina, Chile, and Peru. How does distance seem to affect it? What is the latitude of New York? Of Rio? How much farther east is the latter port? Measure the distance from Para to Europe; to New York; notice that South America is about as near to Europe as to the United States.

But a great hindrance to our trade with South America is the lack of regular and frequent steamship-service. Fifty European vessels to one American vessel enter the ports of Rio and Valparaiso. The South American merchant ordering goods from Europe is sure of their prompt delivery; but he may have to wait a month before receiving them from the United States. The European merchant also allows him a longer time in which to pay for them.

South America needs our manufactured goods and we need the raw products and foods of her tropical countries. Many of these now go first to Europe and are then brought to us, thereby increasing the cost. Many American goods also, destined for South American ports, are first carried to Europe and then forwarded to their destination. This is because there is better service between Europe and the United States and between Europe and South America than there is between the United States and South America. Thus both our exports and imports are carried at the greatest disadvantage. It is also said by our consuls residing in South America that American merchants fail to secure trade because they do not prepare goods according to the tastes and needs of the South American people. Circulars and labels that are put on goods are printed in English, a language which the people cannot read. What languages should be used?

Written Work.—1. Make a list of all the things which hinder our trade with South America and tell how each affects trade.

64. Brazil.—Describe the location and physical features of Brazil (LI). Compare with the United States as to size and population. What are the products of the coast plain? The highlands? The Amazon Valley? In what parts of Brazil do you find stock (p. 77)? Are there many harbors along the coast? Name the ports that have railroads leading inland (Map, p. 77). These roads bring the beef, hides, cotton, coffee, and other products of the coast and highland regions to the seaboard. Many of these coast towns have developed manufacturing industries.

Cottons, woolens, silks, and carpets are made at Rio, Nictheroy, Maranhao, Porto Allegre, and Rio Grande do Sul. There are numerous sugar mills and a few refineries in Campos, Bahia, and Pernambuco. Flour, leather goods, and articles of wood are made at various places.

Most of the people of Brazil are engaged in agriculture. The cultivated lands are almost entirely within a few hundred miles of the coast. Coffee and sugar are the leading products. Cotton, hides, cocoa, tobacco, are next in value.

What other farm and forest products come from Brazil? What of its mineral wealth? Coal and petroleum are both found, but are mined in small quantities. Gold and diamonds are the most valuable mineral products. Monazite sand, used in making mantles for incandescent electric lights, is a growing export. Besides coffee, rubber, and sugar, Brazil sends to the United States, dyes, nuts, cocoa, and hides. Our largest exports to that country are wheat flour, kerosene, machinery, and hardware. Besides these, lard and bacon, scientific apparatus, cottons, cotton-seed oil, and engines are most important.

Written Work.—1. On outline map of South America write the chief productions of Brazil and the leading towns and seaports. **2.** On a similar map write our exports to and our imports from that country. **3.** On outline map of the world shade the coffee-growing countries (see index under coffee).

65. Coffee and Rubber are the chief products of Brazil, forming five-sixths of the total exports of the country. The eastern slopes of the Brazilian Andes are the richest coffee region in the world. The soil is a reddish volcanic ash, rich in iron, which seems necessary to successful coffee culture.

The original home of the coffee tree was in Yemen, in Southern Arabia, where Mocha, the most expensive variety, is still grown. The tree is an evergreen growing to the height of about 25 feet if left to itself, but it is pruned down to grow as a spreading shrub to an average height of ten feet. It grows only in the tropics, and best on well-watered mountain sides. It cannot endure the hot sun, and so on the lower mountain levels is cultivated in the shade of larger trees. The fruit is a berry of the size and appearance of a cranberry. It contains usually two "beans," which are removed by crushing or "pulping" the fruit when ripe. The coffee beans are then dried in the sun for a few days, after which the seed coats which cover them are removed by machinery. The coffee is then graded according to size by allowing it to roll down a tube or sieve pierced with holes of different sizes. But the quality does not depend on size alone. The full-rounded beans are the best. In Arabia and Turkey skilled workmen sort the coffee by hand, the best grades of hand-sorted coffee often bringing four or five dollars a pound. Coffee is put up in bags of 132 pounds each and is then ready for export. What part of the world's supply of coffee does Brazil produce?

The name "*India-rubber*" indicates what was once the chief source and use of this substance. An American named Charles Goodyear discovered in 1842 a way of hardening rubber by melting sulphur with it so that it could be worked into any form desired. This process is called "vulcanizing," and was the beginning of one of the greatest of our manufacturing industries.

Where is rubber obtained (index)? The chief industry of the Amazon is rubber-gathering. The men go in boats up the river and its branches to the rubber groves. The trees are gashed with a hatchet and a cup put underneath the wound to catch the milky juice which slowly oozes out. When a quantity of the sap is obtained it is taken to the camp and coagulated. This is done by dipping a wooden paddle in the juice and then holding it in the smoke from burning palm nuts. The juice thickens and changes to the familiar reddish-brown of rubber. The paddle is then dipped again and again until a coating of rubber weighing several pounds adheres to it. This is then cut through on one side and removed. The rubber is taken by boats to Para or Manaos, where it sells for about fifty-five cents a pound. The usual annual product of Brazil is about 3,000 tons, half of which is exported to the United States.

Written Work.—1. On outline map of the world indicate by shading the coffee-growing regions. **2.** In the same way indicate rubber-producing regions. (See maps and index.)

66. The Guiana Colonies and Venezuela.—What nations own the Guiana colonies (LI)? Describe the surface and climate; animal life; productions and exports. The climate of these colonies is too unhealthy for Europeans, and the work on the plantation is done by negroes. Cane sugar has long been the chief product, but the fall in price due to the competition of beet sugar has compelled many planters to raise coffee, cocoa, tobacco, and rice instead.

The low strip of coast is the only cultivated land; back of this is a rough, mountainous country where considerable gold is washed out of the sandy beds of mountain streams. Our imports from the Guianas are cocoa, sugar, and small amounts of coffee and phosphate rock. We sell them flour, meat, cloth, kerosene, steel, and manufactures of wood.

Venezuela lies mainly in the Orinoco Valley. Describe the surface of the other parts. The country is largely forest-covered and unexplored. The northern highlands about Caracas and Valencia are the chief farming region. What are the two leading products (LI)? Many cattle are raised on the llanos. The hides are the most valuable part of the animal and are exported. What metals are mined? Next to coffee and cocoa, asphalt is the largest export. For what is asphalt used? Rubber, cabinet and dyewoods, vanilla, and copaiba balsam, a valuable medicine, are obtained from the forests.

As in the case of other South American countries, civil wars have retarded the growth of population and industries. How many people are there to the square mile in Venezuela? Compare with the United States. What are the chief cities? They are built on the highlands at a distance from the sea and are connected with the nearest ports by short lines of railroad. The United States has half of Venezuela's trade, buying most of her coffee and asphalt and selling her cotton, butter, lard, hams, flour, kerosene, and lumber.

Written Work.—1. On an outline map of Venezuela, locate chief towns and products. **2.** On an outline map of South America write our imports from Venezuela and our exports to that country.

67. Colombia.—In what natural divisions of the continent does Colombia lie (LII, 4)? How do the Andes affect the climate and vegetation (LII, 5)? How do they affect transportation? What are the products of each natural section? The plateaus along the Cauca and Magdalena rivers are the most valuable and healthful parts of the country. The climate and products of these plateaus are those of the temperate zone. Along the coasts, sugar, coffee, cacao, and fruits are grown. The mountain regions are rich in minerals. Coal and iron occur together near Bogotá and have given rise to iron industries. But the cities of Colombia cannot use home coal, for it costs more to bring it from the mines on the backs of mules than to import it from the United States.

A large part of Colombia is in the upper Amazon Valley. Much of it is forest-covered, yielding the same products as Venezuela. The llanos also extend into Colombia, where many cattle are raised, and leather and shoes are made from the hides at Barranquilla. Cattle, hides, "jerked" beef, and tobacco are largely exported to the West Indies. Coffee, cocoanuts, hides, and bananas are sent to the United States in return for our cottons, flour, meats, iron and steel, shoes, coal, and kerosene. What is the entire value of Colombia's foreign trade (Table VI)? What is our share of it? What is the density of population? Name some circumstances that interfere with production in Colombia. Manufactures are very crude, embracing hats, shoes, iron, candles, soap, and liquors.

Written Work.—1. Draw sketch map and locate chief towns and industries. **2.** On the trade map write our exports to and imports from Colombia.

68. Ecuador.—(LII.) This country is crossed by the Andes in two lofty ranges. What surface divisions do they make? Effect on climate? Both the eastern and western slopes are forested, also the northern part of the coast plain. Rubber, cinchona, ivory, and Brazil nuts are found. The warm lowlands produce cacao, sugar, and cotton. The mountain slopes yield coffee. The plateaus yield grain and fruits, but the cost of carrying them down to the coast towns by mules is so great that foodstuffs are imported. What minerals are found? Gold is the only metal mined. The *only* important manufacture is Panama hats, in which the workmen are very expert.

These are made from a fiber obtained from the midrib of the leaf of the screw pine. The fiber is very fine and must be plaited under water, or where the air is moist. The hat is woven in one circular piece and then pressed into any desired shape. They command a high price, ranging from five to fifty dollars each. The name comes from the fact that these hats were first imported by way of the Isthmus of Panama.

Ecuador is the largest producer of cocoa, which forms three-fourths of the exports. It is exported mainly to France. Much goes also to Spain, Great Britain, and the United States. Rubber, coffee, ivory, and hides are other leading exports. Woolen and cotton goods are the largest imports from Europe. From the United States Ecuador imports lard, cottons, flour, iron and steel, and kerosene.

Transportation is poorly provided for. A railroad is about half completed from Guayaquil to Quito. Besides this there are only bridle paths. Trade with the United States goes by way of the Panama Railway; with other countries, by steamer around Cape Horn.

Written Work.—1. Write on trade map our exports to Ecuador and our imports from that country. **2.** Write a paragraph on the natural divisions and products of Ecuador.

69. The Cacao Tree grows best in a warm, moist climate, on low grounds where the soil is rich and deep. The region near Guayaquil has upwards of 40,000,000 of cacao trees. The Island of St. Thomas in the Gulf of Guinea, the Venezuela coast, Ceylon, and Java rank next in the production of cacao.

The tree is an evergreen with smooth leaves, growing to a height of eighteen feet. The fruit is a fleshy pod, thicker at the center than at the ends. It has five cells, each of which contains from twenty to thirty thick, almond-shaped seeds. The preparation for market consists in removing the seeds from the pods and burying them in green leaves, where they are allowed to ferment for a week. The heat of fermentation removes a bitter taste and prevents the seeds from sprouting. They are then dried and rubbed to remove any gummy matter which adheres to them. The seed coats when removed are "cocoa shells" and are used for making the drink called "cocoa." The beans contain an oil which is extracted by heating and forms a nutritious food known as "cocoa butter." When the beans are ground to a dry powder we have cocoa. When ground with sugar and pressed into cakes the product is called "chocolate."

All forms of cocoa are valuable foods and much used in tropical countries. Spain, France, Portugal, and the United States are also large consumers.

Written Work.—1. On outline map of the world shade all the regions producing cacao. **2.** Write on the uses of the products of the cacao-tree.

70. Peru.—(Review LIII.) What is the size and population of Peru? Density of population? Half the people are native Indians. Describe the climate. Why is the coast region rainless? Cotton, coffee, and sugar are cultivated with the help of irrigation. What have you learned about Peruvian cotton (10)? The products of the plateaus and forests resemble those of Ecuador. What do you know of the mines of Peru? The entire products of the mines are worth many millions of dollars annually. Most metals are exported in the ore, to be smelted and refined in foreign countries. What does this teach us of the civilization of the Peruvians? What are the important railroads of Peru (see map of South America)? They connect the seaport towns with the mines and farming centers of the interior.

A plant peculiar to this part of South America is the coca shrub. A medicine, cocaine, much used at present in surgical operations, is made=

74. Uruguay and Paraguay.—(Review LIV.) *Uruguay* is a level, fertile plain with abundant navigable waterways. Grazing is the chief industry, though agriculture is increasing. Wheat, flax, and the vine are cultivated. The wool product exceeds a hundred million pounds, and is the largest export. Seven-eighths the total exports are animal products. What is their value (Table VI)? What is the value of the imports? We sell Uruguay oil, naval stores, cotton cloth, and many small wares.

A German company has an immense establishment at Fray Bentos for the manufacture of beef extract. "Jerked" beef is the largest meat export, but salted and refrigerated beef and mutton are increasing in amount. The flour and grain export is in value next to that of animal products.

There are no manufactures of importance, and Uruguay imports various foods, tobacco, textiles, clothing, and iron and steel goods. From the United States she imports farm tools, oil, cloth, and lumber, and sells to us the same products that we receive from Argentina. What is their value?

Paraguay is a rich farming and fruit-growing region. Describe its transportation facilities; its soil; climate; products. What are the exports? Tobacco, manioc, sugar, and oranges are leading products.

Maté is a product peculiar to Paraguay. The shrub from which the leaves are obtained resembles a small orange tree. The leaves are roasted and pounded into powder. This is sewed up in hides and exported to the neighboring countries to the annual value of about a million dollars.

Our exports to Paraguay consist of hardware, kerosene, and canvas; our imports are hides and vegetable extracts. There is no line of railway completed to Montevideo or Buenos Aires but goods are sent part way by water. The manufactures of Paraguay are leather, furniture, cigars, and earthenware. Spirits are distilled from the juice of the sugar cane. England furnishes half the imports. What is our share of them?

Written Work.—1. On an outline map show the rivers, railroads, and towns of Paraguay and Uruguay. 2. Write on trade map our exports to and our imports from these countries. 3. On outline map of the world shade the chief cattle-raising countries.

ASIA.

75. PHYSICAL FEATURES.—(Review Map Studies and LXIV.) How does Asia compare in size and population with the other continents? The interior is so elevated and so far from the sea that it receives too little rain to grow crops. A large part of it is a desert and the rest thinly settled. Describe the northern part of the continent. The bulk of the people live on the eastern and southern coasts, which receive abundant moisture from the monsoons (XII, 5). These coasts are deeply indented by numerous seas which afford inland waterways for ships and have led to an extensive coasting trade. Chinese junks throng these seas and ascend far up the rivers. The valleys along these rivers are the most fertile parts of Asia and furnish nearly all the vegetable products that the people of Asia have to sell. Locate eight of the river valleys of Asia and name some of the products of each. (Physical Map.) The plateaus and desert regions of the interior form about a third of the continent. These are not only unproductive, but they separate the productive regions and act as barriers to commerce. Name three of the deserts; four of the plateaus.

The land of Central and Northern Asia slopes gently toward the Arctic Ocean. But as this ocean and the rivers emptying into it are blocked with ice during the greater part of the year, there is no outlet for trade in this direction. Much of the dry interior is basin-shaped. How does this affect the drainage? What do you know of the salt lakes of this region (LXIV, 3)?

The chief mineral regions are among the Caucasus, Ural, Altai, and Peling mountains. Locate each of these ranges and name the minerals found in each.

Where are the "Steppes" of Asia? What do they produce (LXIV)? What are the Monsoons (LXV)? What are the disadvantages of a wet and a dry season? How does the direction of mountains affect the climate of Central and Southern Asia? The vast chains of continental islands bordering Asia are a part of that continent and of equal importance with the mainland. Name some of these islands. They are very productive and are more progressive than many of the countries of the mainland.

Written Work.—On outline map of Asia draw the rivers and mountain ranges and write the leading productions of each country.

76. People, Industries, Commerce.—(Review LXV.) Asia is the home of oldest civilized nations of the world. They have, however, for many centuries been unprogressive. This has been due in part to the physical barriers which separate them from each other and from other continents, and in part to their observance of ancient customs and religions. What races are found in Asia? What religions prevail? Which three nations leads in civilization in Asia? Industries are not highly advanced among the people of Asia. Nine-tenths of them are farmers. Methods of cultivation and farming utensils are rude and clumsy, except in some of the European colonies where modern methods have been introduced.

China, India, and Western Asia have since the earliest times been famous for the manufacture of silk and woolen goods, carpets, rugs, and a great variety of metal work. But their methods of hand-manufacture have been so far surpassed by modern machinery that the nations of Asia instead of selling textiles to Europe are now buying them from that continent and from America.

In spite of their methods of production and difficulties of transportation Asia has always had an extensive inland and foreign commerce. What do you know of this commerce (LXVI, 4; LXIX, 3; LX, 1; LXXI, 5)? What about methods of transportation? How has transportation been improved in recent times (p. 108)? What railroads now connect Asia with Europe? Trace the route from Hankau to St. Petersburg; from Central Asia to St. Petersburg. Which country of Asia has the most railroads (p. 67)? What does the foreign trade of countries having railroads exceed that of countries having none?

Written Work.—1. Make a list of the countries of Asia, of the races inhabiting each, of the religions of each and the leading occupations in each.

77. The Chinese Empire.—(Review LXVI.) Of what does the Empire consist? Compare it with the United States in area and population. What is the character of the Chinese? How do they rank in education? Describe the surface, minerals, occupations, and productions. What are the two great staple products and exports? Compare China with the other countries in the extent of its coal fields; in the production of coal (Fig. 11). China has many roads traversing the Empire in every direction, but they are in such bad condition that wheelbarrows, carts, and mules are the only means of transportation that car

(Fig. 21)? Japan, like China, is a large exporter of silk, tea, rice, paper lacquer goods, and chinaware; but, unlike China, she is rapidly coming to manufacture the greater part of the goods needed for home use. Cannon, small arms, and steel ships are some of the larger products. But textile goods, boots and shoes, clothing, glass, hardware, scientific instruments, clocks, watches, medicines, and bicycles are only a few of the multitude of articles now produced by the "Yankees of the East." A thorough system of schools and colleges provides for education, and thousands of young men and women are sent abroad to learn the best there is in the institutions of foreign countries.

The commerce of Japan has increased fivefold in twenty years. What is the value of her exports? Of her imports? What is the share of the United States in each? Raw cotton from America is her largest import and raw silk sold to America is the largest export.

Japan manufactures the cotton into yarn and cheap grades of cloth for trade with China and Southern Asia, in return for which she buys rice, sugar, tobacco, and beans. Copper is largely exported to Great Britain and the United States. What is the rank of Japan in copper (Fig. 13)? Japan is poor in other minerals. She imports iron and steel goods from Germany, Great Britain, and the United States; locomotives, railroad supplies, machinery, and telegraphic and other electrical apparatus are the chief items. She also imports from this country kerosene, flour, paraffin, and tobacco. Besides silk, our imports from Japan are tea, matting, camphor, rice, copper, and chinaware.

Written Work.—**1.** On outline map of Asia locate the chief ports, cities and productions of Japan. **2.** On a similar map write our imports from Japan and our exports to that country.

81. Indo-China.—(LXVIII.) What does Indo-China include? Which part belongs to England? To France? Which is independent? What is the population? What are the agricultural products? The forest products? Gamboge (physical map) is the hardened sap of a tree and makes a yellow dye. The civilization of the countries of Indo-China has not advanced beyond the agricultural stage. Farming, fishing, and lumbering are the leading occupations. Rice is the only export of importance. Burma, Siam, and Cochin-China are the largest rice exporting countries in the world. Their product is sold mainly to France, China, and Japan. The teakwood forests along the Menam River and the rubber groves along the Salwen furnish the second largest export. Pepper, spices, sugar, cotton, and tobacco are also exported. The Malay States lead in the production of tin. This is shipped from Singapore, the chief tin market in the world, and next to Hongkong the most important seaport in Asia. Its exports are valued at $300,000,000 annually and includes opiums, spices, woods, and gambier, a vegetable extract used in tanning. Rice is the largest import of Singapore and is carried to many parts of the world. Cotton, tobacco, fish, coral, and petroleum are also large imports. All these goods are re-exported. The United States imports tin, hides, spices, gambier, shellac, and indigo from Indo-China and exports to that part of the world kerosene, cottons, machinery, and tobacco.

Written Work.—**1.** On outline map of Indo-China locate the chief cities, rivers and products. **2.** On a similar map write our exports to and our imports from that country.

82. Russian Asia.—The Russian possessions include nearly half the continent of Asia. (Review LXXI, 4-7.) Describe the northern third of Siberia (LXIV, 2). Fossil ivory is the only product. What two products are obtained in the central third? Immense pine forests extend nearly across the continent. Th are not yet used for lumber, but are visited only by hunters search of fur-bearing animals. Southern Siberia contains t great grain and stock-raising regions. Large crops of wheat, r and oats are grown. What animals are raised? What miner are mined in Siberia? Little attention is paid to any metal b gold. Two-thirds of Russia's gold output comes from Sibe ri What is its value (Fig. 15)? Where is Trans-Caucasia? It pro duces all of Russia's petroleum. How does it rank in this prod uct (Fig. 12)? The oil is pumped from deep wells near Baku. Nearly the whole population of that vicinity are engaged in pre paring petroleum for market. What are the agricultural products of Trans-Caucasia? It supplies some cotton and much raw silk for the Moscow factories. The people are skilled manufacturers of carpets, silks, and metal goods. What is the situation of Russian Turkestan? It furnished about one and a half millions bales of cotton annually for Russia's great factories at Lodz, Warsaw, and Moscow. Its farm industries depend upon irrigation. What are its chief cities? For what is Bokhara noted? Khiva, Samarcand, Kokan, and Bokhara have long been famous centers for caravan trade with the rest of Asia and with Europe. Manufactures in Russian Asia are not yet of great extent, but they are increasing so rapidly that it is thought they will soon supply the needs of the country. Since the opening of the Trans-Siberian railway several millions of Russians have emigrated from Europe to Asia, and have become large consumers of Russia's manufactured goods, exchanging for them their grain, cattle, cotton, wool, and minerals. So high a duty is placed on foreign goods that the people are obliged to buy most things of Russia. What goods do we sell to Russia? What do we buy of her (Tables III and IV)?

Domestic trade has been greatly helped by improved transportations. Cotton was formerly carried from Ferghana to Orenburg by caravan, but now a railroad has been completed along that route. Trace the route from Bokhara to Batum; from Dalny to St. Petersburg. Internal trade is helped greatly by navigation on the Black and Caspian Seas and on the Volga River. The Ob and the Irtish are navigable nearly to their sources, and are connected by canal with the Yenisei. This secures water communication with Lake Baikal. Caravans from China connect with this route at Maimatchin and Kiahta. What do they carry (LXVI, 4)? Tomsk and Irkutsk are the most important manufacturing cities in Siberia. Flour, leather, and articles of wood are made. Vladivostok is the chief port on the Pacific and has much trade with Europe, Japan, Korea, and the United States. We import squirrel skins and other furs and sell farm tools, flour, building materials, and steel goods.

Written Work.—**1.** On outline map of Asia write the leading productions of Russian Asia; draw the railroads and name the important towns along the routes **2.** On trade map write our exports to Siberia and our imports from that country.

83. Persia and Afghanistan.—Persia lies in the western pa of the high tableland of Central Asia. The surface consists rugged mountains and salt deserts with many fertile valleys a plains. There is little rain, but where the mountain streams c be used for irrigation, fine crops of wheat, poppies, cotto tobacco, and fruits (LXX, 3) are grown. How is the wat obtained (LXX, 2)? What do you know of the climate? Th dates of Persia are noted for excellence, and the rose garde of Shiraz furnish the most valuable of perfumes (LIX, What minerals are found? Nearly all the turquoise in t world is found near Nishapur. The mines of iron, lead, copp and tin are little worked because there is no means of tra

porting the ore to foreign markets and no machinery for smelting it at home. Gold, salt, and petroleum are produced in small quantities. For what manufactures are the Persians noted? Carpets and rugs are made by hand in nearly every part of Persia. Each village has its peculiar patterns and no two rugs are made alike A large carpet may take several years of labor to complete it. There are valuable pearl fisheries belonging to Great Britain near the Bahrein Islands in the Persian Gulf. Thousands of men are employed, and the annual product is worth more than $1,000,000. What are the exports of Persia (LXX, 3)? Fruits, raw cotton and wool, silk, opium, rice, and carpets are the most valuable. Russia buys the cotton, wool, rice, and fruits, and England nearly all the rest of the exports.

These two countries are rivals for the Persian trade. There are no railroads in Persia, but goods are carried by carts and caravans from Teheran, Tabriz, and the interior trade centers to the Russian frontier on the north and to the ports on the Persian Gulf. What are the size and population of Persia? What is the value of its exports? Its imports? These consist mainly of cotton cloth, sugar, tea and hardware. Why has the United States no trade directly with Persia? How do we obtain Persian goods?

Afghanistan is a country of high mountains and deep valleys. (Review LXX.) Describe the people. The caravan routes. What famous passes does it contain? What countries do these connect? Afghanistan, like Persia, lies between Russian and British territory, and these countries are rivals for political and commercial control. What animals do the Afghans raise? Their agricultural products are fruits, grain, tobacco, and some drugs and spices. Trade is mainly with India. The Afghans sell their horses, cattle, hides, silk, tobacco, and spices and buy dyes, cottons, sugar, and tea.

Written Work.—On outline map locate the chief cities of Persia and Afghanistan and the leading productions of each country.

84. Asiatic Turkey and Arabia.—Of what does Asiatic Turkey consist (LXXI)? The peninsula lying between the Black and Mediterranean Seas long known as "Asia Minor" is now called "*Anatolia.*" *Armenia* borders on Trans-Caucasia; *Syria* lies along the eastern shore of the Mediterranean. *Mesopotamia* is a name meaning "between the rivers," and is applied to the country lying between the Tigris and Euphrates rivers. In the mountainous region east of it and bordering on Persia is *Kurdistan.* The western part of *Arabia* is also a part of the Turkish Empire. What provinces does it contain? How is the rest of Arabia governed (LXX, 7)? All of these countries are located on an elevated tableland, and except along the coast there is too little rain for successful farming. Hence the main industry is stock-raising. In ancient times, this part of Asia, through careful irrigation, was cultivated like a garden and contained rich and powerful cities. Now, owing to wars and bad government, much of it is an unproductive desert.

What are the productions of Asiatic Turkey? The exports? What do you know of the sponge and coral fisheries? Smyrna and Beirut are the chief ports, but most of the trade goes through Constantinople, which is connected by railroad on the Asiatic side with the chief cities. Beirut, however, exports silk, tobacco and oranges to the countries of Europe. Rugs, carpets, raisins, figs, opium, and valonia (LIX, 3) come from Smyrna. Trebizond, on the Black Sea, is the terminus of caravans bringing fruits from Mesopotamia and Persia.

For what products is Arabia famous? It is the native land of the horse, the camel, and the goat. Aden is a British colony and a free port. Many goods are exchanged here. The United States sends cotton cloth to Aden and buys goat and sheep skins, Mocha coffee, and ivory.

Written Work.—1. Make a list of the chief cities of Arabia and Asiatic Turkey and state an important fact about each. 2. On outline map of Asia locate these cities and write the leading productions of the above countries. 3. On the trade map of Asia already begun write our exports to these countries and our imports from them.

AFRICA.

85. Physical Features.—(Review Map Studies and LXXII.) What is said of the surface of Africa as a whole? Of the coast plain? The coast line is so regular that there is only one first-class natural harbor, that of Lorenzo Marquez. Locate the deserts and describe the effect of each on climate. Where are the chief mountain ranges? How do they affect climate? The Atlas range arrests moisture from the Mediterranean Sea and makes the coast from Tunis to Morocco fertile. The low coast plain is moist, hot, and so unhealthy that much of it is uninhabitable for white people.

What is the cause of the Nile's overflow? What winds bring the rain to Abyssinia and the Lake regions? The Sahara or Great Desert extends from the Red Sea to the Atlantic Ocean. Describe its surface; inhabitants; oases.

This region lies in the path of the southeast trade winds, which have become heated by passing over the Arabian peninsula. They thus become drying winds, taking up moisture as they proceed. As there are no mountains in the Sahara high enough to cool these winds sufficiently to condense their moisture this entire region is left barren. The oases are due to the rainfall on the southern slopes of the Atlas Mountains which runs down into the desert and sinks below the surface. These underground waters reappear in lower places as springs, forming the fertile spots so necessary as halting places for travelers and caravans. The date-palm is made to flourish in the desert by planting it so deep that its roots can reach the underground waters.

The Sudan is a strip of rolling prairie land stretching nearly across the continent. Can you account for its rainfall? Describe its people and natural wealth. It is more elevated than the Sahara and is traversed by numerous ranges of low mountains.

Central Africa lies between 10° north and 10° south latitude. What do you know of its climate and vegetation? It has the most extensive forests in the world, covering an area one-third as large as the United States. Cotton, coffee, tropical fruit and grains, palm trees, and rubber vines are found everywhere. What of the animals, insects, and peoples?

South Africa lies partly in the temperate zone. Its climate is dry and healthy and more white people live here than in any other part of the continent. The surface is elevated, rising abruptly from the coast. It has rich mineral wealth, consisting of coal, iron, diamonds, and gold. The climate is suited to agriculture and stock-raising.

The Rivers of Africa with the exception of the Niger are marked by waterfalls and rapids where the central plateau joins the coast plain. One of these, Victoria Falls, is the grandest cataract in the world. How do these rapids and waterfalls affect the country's development? Why?

Written Work.—On outline map of Africa locate the mountains, rivers, deserts, and the chief products.

86. Industries and Trade.—Africa is of all the continents the least important as regards production and trade. This is due to the low state of civilization of the inhabitants, to their frequent wars and lack of settled government, and also to an

unfavorable climate and soil. The continent is now entirely divided up among the nations of Europe, only the barbarous kingdoms of Abyssinia and Morocco and the little Liberian Republic remaining independent. But only in Egypt, Algeria, and in South Africa has any real progress been made in reducing the natives to law and order, and in securing regular crops and avenues of trade. There is a fringe of European settlements along the eastern and western coasts where traders exchange cloth, knives, firearms, and rum for the oil and nuts of the palm, the gums, coffee, ivory, and other natural forms of wealth.

Experiments in farming are being made by the governments of Germany, France, and Great Britain to ascertain what crops may be most profitably grown, schools are maintained for the natives, roads are being built and capital is invested in various ways in attempts to develop profitable industries and trade. But so far these experiments have cost far more than has been realized from them. At present the chief wealth of Africa is derived from its mines, forests, and other sources of natural wealth. Gold and diamonds are the most important, but the vast mineral wealth of Africa has scarcely been touched. Coal, iron, and petroleum exist there in vast quantities. Why is there little use for them? The African forests cover a million of square miles and contain such valuable timber as teak, ebony, mahogany, redwood, and other hardwoods. Rubber trees and vines and the palm are found everywhere and are a great source of wealth. Trade is mainly carried by caravans of mules and camels and by trains of slaves. Railroads have been most largely built in Egypt and South Africa, although there are a few short lines along the coast at various points. The completion of the projected railroad from the Cape of Good Hope to Cairo will open up the most productive part of the continent to trade. The foreign trade of Africa is small as compared with its size, population, and rich natural resources.

Written Work.—1. On outline map of Africa draw the chief railroads and tell the advantages that will come from the "Cape to Cairo" road. **2.** Write a paragraph describing the means of communication in Africa.

87. Foreign Control of Africa.—Twenty-five years ago Africa was known as "the Dark Continent." What did this mean? Now the entire region has been explored. What nations control it? Egypt and Northern Africa were among the earliest homes of man. What have you learned about these countries? What nations control these parts? For thousands of years they furnished grain for the people of Europe and Western Asia.

During the latter part of the 15th century Portuguese sailors began to make their way down the Western coast, until Diaz reached the Cape in 1486 and Da Gama rounded it, completing the voyage to India in 1497. Settlements were rapidly made along the coast, and trade in ivory, gold, and slaves began, for which the natives received cloth, knives, weapons, and, mainly, rum.

The Portuguese had found the Arabs in control of the African and Indian trade, and after many years of war drove them out. The Dutch afterwards expelled the Portuguese and later were themselves displaced by the English, who now hold the best part of the continent. France has entered Africa from the north and now owns the most of the Sahara and the Sudan and a large part of the Guinea coast. What provinces are held by Germany? Italy? Portugal? Which countries are independent? How is Egypt governed? What interests have the English there and how do they share in the government?

The great hindrances to the commercial development of Africa have been the lack of settled governments and roads and the existence of the slave trade. This last is forbidden by all European governments, but is extensively carried on by Arab traders.

In tropical Africa where there are no beasts of burden, goods must be carried by men. The stronger *Negro tribes* raid the weaker ones, and carry off prisoners to sell to the traders, *who use them* to carry goods to the coast and then sell them again to other *traders*. Only the Turkish provinces allow slavery, but it is secretly practised *in* other places. The British and French have done most to improve the *industrial* condition of the people. Algeria, formerly a land of thieves, has a strong government and property is safe. About 2,000 miles of railroads have been built and excellent highways. The foreign trade amounts to nearly $150,000,000. What France has done for Algeria, Great Britain has done for Egypt and South Africa. These three sections are the best developed parts of the continent. In all colonies of England, Germany, and France, successful attempts have been made to introduce suitable plants for cultivation. Coffee, cocoa, tobacco, cotton, sugar, tea, indigo, and rice are profitably raised in many places. In order that these industries may flourish, railroads or other means of transportation must be furnished to bring supplies to the farmer and to take away his goods. How does the coffee of Central Africa find its way to the seaboard (map)? What lines are found in Angola, Cape Colony, and German Southwest Africa? What is their purpose? Find six other lines and tell their use? The British have planned a railroad from Cape Town to Cairo. The north end now extends to Khartum and the south end has crossed the Zambezi by a fine bridge above Victoria Falls. How will this road help South and Central Africa? Elementary and industrial schools have been begun in most colonies to teach the natives. How will this be an advantage to the country owning the colony? Will it make government easier? Will it make the land more productive? So far the countries of Europe have spent far more on their colonies than they have received. May this become a profitable investment? Why?

Written Work.—Make a list of the colonies belonging to Great Britain, France, Germany, Portugal, Turkey, and Italy and tell two leading products of each.

88. Region of the Nile.—Egypt is made fertile by irrigation and by the overflow of the Nile (LXXIII). Describe the annual rise and fall of the river. The black mud spread over the land by its annual overflow has increased to scores of feet in thickness in the Delta and has changed the valley to a level plain; such a river valley is called a "flood plain." Great dams and storage reservoirs are built at different places to hold back the water for use during the dry season. The fertile land of Egypt is a little greater in area than the State of Vermont. Compare its population with that of Vermont. The climate of Egypt enables the farmer to grow two or three crops each year where the water supply is sufficient. Cotton, sugar, and rice are sown in March and harvested in October and November. These are the chief crops. In November, wheat, beans, and millet are planted and harvested in late spring. On the irrigated fields crops of vegetables are raised between the summer and winter crops. Tobacco is grown, but Turkish tobacco is imported for making the famous Egyptian cigarettes. This is the only manufacturing industry of importance and is almost entirely carried on at Cairo.

Sheep, goats, and camels are raised, but Egypt is a large importer of animal products. Rice is also imported, but wheat, corn and beans are sold to the countries of Europe. Cotton is the largest crop raised for export. How does it compare with that of the United States (Fig. 18)? Egyptian cotton is a long staple and the most of it is sold to Great Britain and the United States. The former country has half of Egypt's trade. With Germany and France she supplies Egypt with cloth, iron and steel, and various manufactures. Besides cotton, we buy from Egypt gum arabic and hides and sell to her flour, meat, lumber, iron and steel. What do you know of the caravan trade of Egypt (LXXIII, 4)? Where are the most railroads? The line to Khartum is to be extended to connect with the railroad from Cape Town. How far is this last road built? (See map.) How will its completion help trade in Egypt? What is the advantage of the line to Suakin? Describe the Suez Canal. Four thousand ships pass through this canal each year, more than half of which are British. What possessions of Great Britai

are reached by way of the Suez Canal? It has made Port Said the second seaport of Egypt. Which one ranks first?

The *Egyptian Sudan* is a great undeveloped region with a mixed population about one-fourth that of Egypt. It sells to Egypt rubber, gums, ivory, gold, ostrich feathers, hides and skins, and buys manufactured goods that are brought from the countries of Europe.

Written Work.—1. On outline map of Africa write the chief productions of Egypt. Locate the important railroads and cities. 2. On a similar map write our exports to Egypt and our imports from that country. 3. Write a paragraph on the Suez Canal.

89. The Barbary States.—(Review LXXIV.) What part of Africa do these states occupy? Which of them are fertile? How does the desert affect the climate of Tripoli and Barca? What is the source of their rainfall?

Tripoli and Bengazi are the termini of caravan routes from the Sudan. What products do they bring (LXXIV, 1)?

Algeria and Tunis are the most prosperous of the Barbary States. To what nation do they belong? How do they compare with France in area and population? Agriculture and herding are the chief occupations. There are large forests of cork-oak. Minerals of many kinds are found. Iron and zinc are the chief metals mined. The yield of phosphate rock is second only to that of the United States. What products does Algeria supply to Europe (LXXIV, 3)? Esparto grass grows in unlimited supply in the southern plateaus. It is sent to England and France for use in making paper, and with zinc ore and cork forms the most valuable export. Iron, hides, phosphate, flax, tobacco, grains, wine, and sheep are the other leading exports. Algeria and Tunis depend upon France for seven-eighths of their imports; these consist of cloth, coal, coffee, tea, and various manufactures. From other countries they import cattle, lumber, tobacco, and leather.

The United States has little share in their trade. Our whole trade with French Africa amounts to less than $1,000,000. From Algeria we buy cork, fiber, and goat-skins and sell to her kerosene, tobacco, and farm tools. Market gardening is becoming the greatest industry of Algeria. Vegetables of every sort are raised. There are 3,000,000 of date palms on the Sahara oases and 10,000,000 olive trees on the mountain slopes, while the number of orange, lemon, and other tropical fruit trees is increasing. Transportation is well provided for by good wagon roads and railroads to the seaports connecting with swift steamships for the ports of Europe.

Morocco is a badly governed, barbarous country, and of little importance to commerce. Eggs are the chief export. What are the others (LXXIV, 2)? Its imports are cloth, coffee, sugar, tea, and firearms. Trade is chiefly with Great Britain. There are no means of communication except by messenger, and goods are carried by caravan.

Written Work.—1. On outline map of Africa write the chief products of the Barbary States. 2. Locate the leading towns and draw the chief caravan routes. 3. Write a paragraph on Algeria.

90. The Sahara, Sudan, and Central Africa.—What nation controls the *Sahara?* What do you know of its size, surface, people, and trade (LXXV, 1–6)? What is the chief occupation? How are the oases formed? How is salt obtained? Many of the oases yield an abundance of dates and grain. By removing the surface soil to a depth of ten feet the date palm is made to flourish, as its roots can reach the underground waters. Trace the routes of trade. What goods are exchanged? What is the *Sudan?* What are its products? Describe the people (LXXV, 6–10). What are the occupations? Productions? Exports? Imports (LXXV, 4)? Gums and rubber are gathered in the forests. Rice, millet, and ground-nuts are cultivated. The ground-nut is really the pod of a plant which ripens underground. It yields a valuable oil and is an important export from the Sudan and West Africa.

Where is the *Congo State?* What can you say of its commerce? Of its productions and exports (LXXV, 10–12)? Describe the oil-palm. Coffee, cotton, manioc, cacao, and rice grow where introduced. The Congo State is now the chief source of ivory, the herds of elephants in other sections having been nearly destroyed. Describe the surface of Abyssinia (LXXIII, 10). The raising of cattle, sheep, and goats is the main industry. Coffee is the largest agricultural product; the plant grows wild, and Abyssinia is said to be its earliest home. Cotton, sugar, dates, and grapes flourish but are little cultivated. What minerals are found? Only gold is mined. Transportation is by means of animals. Harar is the chief trade center. A railroad connects this town with Jibuti. Coffee, gold, gums, and wax are exported. Cotton and woolen goods, cutlery, mirrors, and matches are the largest imports. American cottons to the value of $1,000,000 are imported annually.

Written Work.—1. On outline map of Africa write the chief products of Central Africa, the Sahara, and the Sudan and locate the chief towns. 2. Write a paragraph describing the trade of these regions.

91. The Eastern Coast.—(Review LXXVIII.) Where is Portuguese East Africa? What are its products and exports? Rubber, gold, and other metals are now exported. This colony is controlled by three trading companies and trade is almost entirely with Portugal. The colony buys cotton cloth, metal goods, spirits, beer, and wine. What railroads has the colony? They connect with Pretoria, Bulawayo, and Salisbury. Where is German East Africa? It is a rich agricultural region. Cocoanuts, coffee, tobacco, rubber, cacao, sugar, tea, bananas, and corn are cultivated. Many cattle, sheep, and goats are raised by the natives. Various minerals are found, among which are coal, iron, copper, lead, agates, topaz, and tourmalin. Several short lines of railroad have been built. The exports are rubber, gutta percha, copra, ivory, and coffee; the imports are cotton cloth, rice, hardware, and iron. Trade is with the British Colony, Zanzibar, and with Germany.

The Zanzibar Protectorate consists of the islands of Zanzibar and Pemba and a strip of the mainland. Pemba produces nearly all the world's supply of cloves. Other exports are ivory and copra. For what is *Eritrea* noted? Considerable gold is found. What is obtained from *Somali* (LXXVIII, 6)? Cotton, rice, and fruits are imported.

Madagascar is the third largest island in the world. To what nation does it belong? It is very rich in metals, nearly all kinds being found. Gold is chiefly mined. Stock-raising and agriculture are the main occupations. About 3,000,000 cattle are kept. Rice, manioc, sugar, coffee, cotton, cacao, vanilla, and tobacco are grown. The mulberry has been introduced. Valuable forest products used in tanning, dyeing, and medicine are found. Silk and cotton are manufactured. Rubber is the leading export. Rafia, a fiber derived from a species of palm, is obtained there. Wax and ebony are also exported. Cotton cloth is the chief import. Rice, wine, metal goods, and flour are next in value among the imports. What do you know of Mauritius and Reunion Islands? How does Mauritius rank in sugar (Fig. 26)? The United States sells flour, cotton, tobacco, meats, iron and steel to the

colonies of the eastern coast but buys little of them except hides and skins, the raw products which they furnish going to the countries of Europe.

Written Work.—1. On outline map of Africa write the chief products of the countries named in this lesson and locate the chief towns. 2. Make a list of these countries with the exports and imports of each.

92. The Western Coast.—(Review LXXVI.) What are the resources of the western coast? What are the British possessions? The French? The German? The Portuguese? What islands lie off the coast?

All the western colonies export palm oil and nuts, ground-nuts, kola nuts (used in medicine), copal, rubber, coffee, and ivory, and import cotton cloth, cutlery, hardware, firearms, and liquors. What is obtained from the Portuguese Islands? In all of these colonies industries and transportation are undeveloped. Experimental farming is carried on and roads are being built. Schools are conducted for the natives, in many of which instruction is given in the trades and agriculture.

Written Work.—1. On outline map of Africa color the colonies of the western coast belonging to the several nations and write their chief products. 2. Locate the capital of each.

93. South Africa.—This region lies between latitude 15° and 35° south. This is about as far from the equator as the West Indies; yet South Africa, owing to its elevation of 400 feet above sea level, has a temperate climate. What part of it belongs to Germany? To Portugal? The climate of the western half is dry, as the rain brought by the trade winds is cut off by the mountains. What British colonies are found in South Africa? What are the productions of the Cape Colony? Of Basutoland? Of Natal? Of North and South Rhodesia? Of the Orange River Colony? Of the Transvaal? How is transportation provided for? What parts are reached by the railroads? What interior cities?

The export of gold exceeds that of all other products combined. How does South Africa rank in gold (Fig. 15). Diamonds are the second largest export. Ostrich feathers, the hair of the Angora goat (mohair), copper ore, hides, and wine are also important. About all these exports go to Great Britain. But considerable of the wool, mohair, diamonds, feathers, besides spices and oil from the eastern coast, come to the United States in British ships. We sell the South African colonies through the same channel breadstuffs, machinery, provisions, rum, lumber, tobacco, kerosene, cotton cloth, leather goods, and fish. Our exports are more than thirty times as great as our imports. There is little manufacturing in South Africa because of the small number of white people living there. We have no trade with the German colonies.

Written Work.—1. On outline map of Africa write the chief productions of the colonies of South Africa and locate the leading towns. Draw the chief railroads. 2. On a trade map write our imports from South Africa and our exports to that region.

AUSTRALASIA AND OCEANIA

94. Australia.—(Review LXXIX, 1–12.) Compare with the United States in location, size and population. What do you know of the rivers? The lakes? The coast line is very regular. The warm, dry climate is very favorable to the sheep industry, in which Australia outranks all other countries. The basin shape of the continent allows the rainfall of the bordering mountains to run in underground channels to the interior. By boring Artesian wells these veins are tapped and a supply of fresh water is obtained for the sheep and cattle. How does Australia rank in sheep (Fig. 36)? In wool (Fig. 37)? Farming is carried

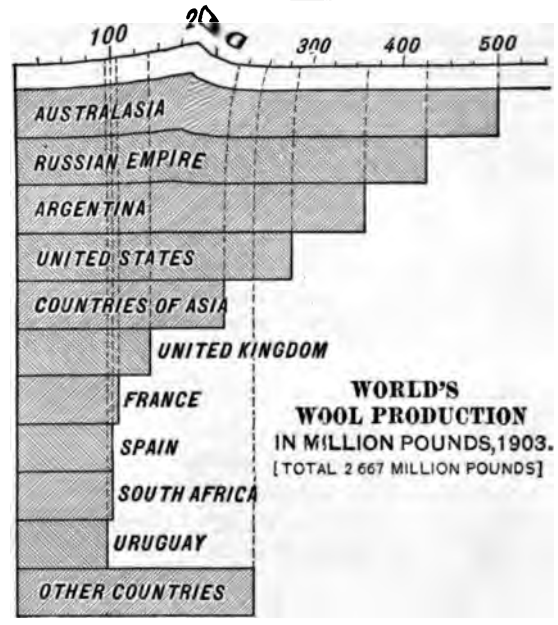


FIG. 37.

on wherever there is sufficient rain. Cotton, corn, sugar, wh and grapes are the leading agricultural products. Fresh gra are sent to England on steamers having cold-storage rooms reach that country in good condition. What minerals are fo in Australia? How does it rank in gold (Fig. 15)? The ave yield of gold is from $85,000,000 to $100,000,000, and $2,000,000,000 have been taken from the mines since 1 Coal, copper, lead, silver, and tin are mined to the annual v of $30,000,000. Butter-making and the preserving of beef mutton by freezing and salting are the next largest indust The manufactures of Australia are increasing, but do not su the needs of the country either in quantity or quality. F machinery, wagons, leather, cloth, ships, flour, beer, and s are the chief articles. The gold, wool, copper, and other mine and much of the meat, butter, and fruit which Australia duces are exported; and this gives her a larger export trad proportion to population than any other country in the w except New Zealand.

Judging from the number of railroads, which part of Australia is developed? Nearly half the 15,000 miles of railways are in Victoria and South Wales. Melbourne and Sydney are the chief ports and are conne by steamship lines with the great commercial countries.

Two-thirds of this trade is with Great Britain, which takes the wool, f and metals, and sells in return textiles, iron work, machinery, s chemicals, and various manufactures. Our import of Australian wo very large, but most of it comes to us by way of Great Britain. Our imports are hides, hemp, and rabbit-skins, which we use in making hats. sell Australia more than twice as much as we buy of her. Our ex include a great variety of manufactured goods among which are flour steel, machinery, tobacco, lumber, paper, explosives, glass, soap, etc. is the total export trade of Australia worth? The import trade? W our share of it (Table VI)?

Written Work.—1. On outline map of Australia locate the chief product cities. 2. On a similar map write our exports to Australia and our imports that country.

95. New Zealand.—(Review LXXIX, 12.) What is the of New Zealand? How many people are there to the sq mile (Table VI)? Describe the soil; climate. What are occupations? Exports? What peculiar products have islands? New Zealand is one of the most prosperous of Bri

colonies. What is the value of her foreign trade and what is the trade balance in favor of New Zealand (Table VI)?

Sheep raising is the greatest industry, wool and frozen mutton forming over half the exports. Cattle are kept largely for dairying, the value of the butter and cheese export approaching $10,000,000. Gold, silver, and coal are the chief minerals. Apples, grapes, and other fruits are extensively grown. New Zealand has 20,000 square miles of forests. One of the famous trees is the kauri pine which yields the kauri (cowrie) gum of commerce. By far the larger part of the gum is found buried in the ground in masses often weighing 100 pounds (LXXIX, 12). It is our chief import from New Zealand.

Manufactures are increasing rapidly in New Zealand and already supply most home needs.

They include iron and brass, building materials, furniture, cotton and woolen goods, boots and shoes, clothing and lumber. Textiles, clothing, steel, sugar, tea, tobacco, spirits, wine, and many small articles of manufacture are imported. Many of these go from the United States in British steamers by way of British ports. What is the value of New Zealand's exports? Imports? What is our share of each (Table VI)? What is the value of her exports per person?

Written Work.—1. Write a paragraph on the industries of New Zealand. **2.** On outline map write the chief products and locate the leading cities and railroads. **3.** On map of Oceania write our exports to and our imports from New Zealand.

96. The Dutch East Indies.—(Review Oceania, LXXX). Of what does Oceania consist? What nations control parts of Oceania? Of what does *Malaysia* consist? Melanesia? Polynesia? What races inhabit each of these sections? What are the productions of each of these groups? The Dutch Indies consist mainly of Java, Sumatra, Celebes, the Moluccas, parts of Borneo, and numerous small islands. How do they compare with Holland in size and population? Java and Madura are the most thickly settled and productive parts of the group. Rice, coffee, cotton, cocoa, corn, sugar, tobacco, cinchona bark, tea, and indigo are all raised in large quantities. In coffee Java ranks next to Brazil in the amount exported. Tobacco is the chief product and export of Sumatra. The Moluccas supply nearly all the nutmegs of commerce, besides pepper and other spices. What is obtained from Banka and Billiton? From Borneo? Among the products of Borneo are edible birds' nests, much prized by the Chinese for making delicacies, dammar, a resin used in making varnish, and beeswax obtained from the forests. Coal and petroleum are found in Java, Sumatra, and Borneo, but in small amounts.

There is regular steamship service with the countries of Europe and Asia. A large part of the land in the Dutch colonies is farmed under the direction of the government and the products are sold at auction in Amsterdam to Dutch merchants, who are the "middlemen" for the distribution of colonial products. So it happens that we buy Java coffee, Sumatra tobacco, and Banka tin in Holland. We also buy there the sugar, gums, and spices grown in the Dutch colonies. Our sales to Holland for export to the Colonies are mainly kerosene and machinery.

Written Work.—1. On outline map of Oceania color the Dutch possessions orange, naming each island or group and write their chief products. **2.** On similar map locate the principal cities and write our exports to these islands and the goods which we buy of them.

97. Possessions of the United States.—Besides Australasia nd the Dutch East Indies, there are over 600 island groups scattered over the vast Pacific Ocean. The most important of these e the Hawaiian and Philippine Islands, belonging to the United tates. How did we obtain possession of each of these groups?

The Hawaiian Islands (XLIII a, 9–14) are, next to Cuba, our largest source of sugar. Describe the origin, climate, and products of these islands. The rich volcanic soil and mild climate make a great variety of products possible for Hawaii, although sugar receives the almost entire attention of farmers. Rice, coffee, tobacco, fruits, and vegetables are grown for home use. Our chief exports to Hawaii are breadstuffs, iron and steel goods, cottons, mineral oils, and provisions. What is the location of the islands with relation to Asia and the United States? What advantage is this to our country? We buy of Hawaii twice as much as we sell to her. Does this mean a loss to us?

The Philippines (XLIII a, 15–22) are the chief foreign possessions of the United States. What is their number? Area? Climate? Population? What is the chief cultivated plant? What are its uses? Does the United States raise fiber plants? For what do we use Manila hemp? What other products come from the Philippines?

These islands are undeveloped. They contain rich mineral wealth of gold, silver, copper, iron and coal. The forests contain valuable and useful timber, with a great variety of gums, rubber, gutta-percha, oils, and dyewoods. Sugar was formerly the most valuable product and may again become so. There are few manufactures in the Philippines and few staple foods are produced. Our exports are, therefore, largely cloths, foodstuffs, beer and liquors, petroleum, iron and steel goods, watches, bicycles, and a long list of small manufactured wares.

Samoa, Guam, and Wake Island are valuable only as coaling stations and as stations for our trans-Pacific cable.

Written Work—1. On outline map of Oceania color the United States possessions blue, with the name of each and its chief products. **2.** On the trade map write our exports to each island group and what we receive from it.

98. Foreign Possessions in Oceania.—Great Britain, France, and Germany control nearly all the 600 or more smaller groups of Pacific Islands. The eastern half of New Guinea, North Borneo with the provinces of Brunei and Sarawak, and the Fiji group are the most important British possessions. Only the last are well developed. The products comprise tropical fruits, valuable timber, gums, spices, and minerals. Coffee, tea, sugar, rice, tobacco, and corn are cultivated. Pearls, tortoise-shell, the down of the cotton tree, edible birds' nests, and sea-cucumbers, a kind of fish much prized for food in Eastern countries, are also found.

Of less importance are the Pitcairn, Gilbert, Phœnix, Lagoon and Solomon groups. Copra and other fruits, coffee, cocoa, arrowroot, and guano are some of the products. To all of these islands Great Britain sells meats, breadstuffs, cloth, hardware, kerosene and farming tools. Many of these goods come from the United States.

The chief French possessions are New Caledonia, New Hebrides, and Tahiti. The agricultural products are the same as those of the British groups. Copper, coal, and nickel are mined on New Caledonia and the rubber and mulberry trees have been introduced. Tahiti exports copra, vanilla, and mother-of-pearl.

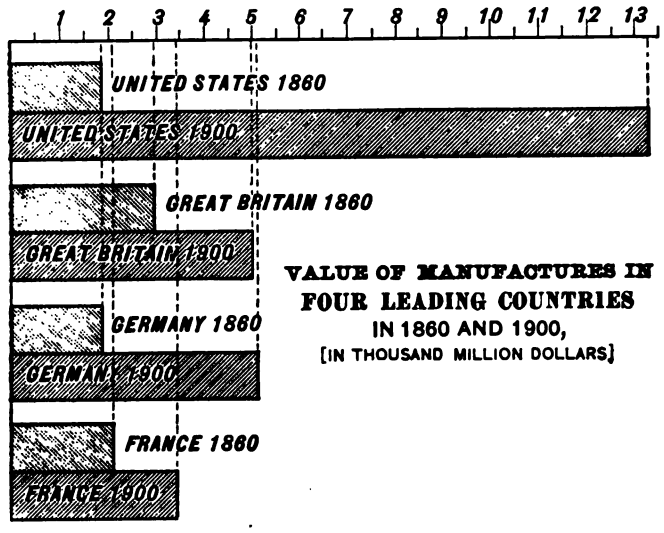
Kaiser Wilhelm's Land in New Guinea, the Bismarck Archipelago, the Caroline, Marshall, and part of the Solomon and Samoan groups constitute the chief German possessions. These are very important to Germany as coaling and trading stations as well as for the value of their products. Nearly all are rich in the natural wealth of the tropics. The domestic animals have been introduced in New Guinea, and gold and valuable woods are exported.

Written Work.—Color the British possessions in Oceania red, the German yellow, and the French green, and write the leading production of each.

INDEX TO LESSONS IN COMMERCIAL GEOGRAPHY.

Our National Growth in Manufactures.—The United States is not only the greatest manufacturing country in the world, but the rate at which our industries increase is many times greater than the rate of increase in any other country.

The following diagram shows that the growth of our manufactures since 1860 has been ten times as great as in Great Britain, twice as great as in Germany, and four times as great as in France.



The United States has been long noted as the greatest agricultural country in the world. But agriculture is no longer our chief industry, and the manufactures dependent on agriculture have also taken the second place.

Find from Table I what class of manufactures exceeds all others. Find which classes depend on agriculture. On mining. On grazing. On lumbering.

TABLE I.

OUR TWENTY CHIEF MANUFACTURING INDUSTRIES AND APPROXIMATE VALUE IN 1903–4.

Iron and Steel Goods	$975,000,000
Machinery and Engines	950,000,000
Preserved Meats (beef and pork)	790,000,000
Lumber and Manufacturers of	735,000,000
Textiles (cotton, woolen, linens and silks)	690,000,000
Clothing	623,000,000
Flour and Meal	560,000,000
Paper (including wood pulp), Stationery, Books and Newspapers	522,000,000
Leather and Leather Goods	520,000,000
Cars and Vehicles	340,000,000
Distilled and Malt Liquors	334,000,000
Building Materials (brick, stone, lime, cement)	320,000,000
Manufactures of Tobacco	293,000,000
Copper, Brass, and Bronze	254,000,000
Refined Sugar and Molasses	241,000,000
Lead Products	183,000,000
Bread and Bakery Products	175,000,000
Furniture and Upholstering	133,000,000
Butter, Cheese, and Condensed Milk	131,000,000
Refined Petroleum	124,000,000
Other Manufactures	4,090,000,000
Total	$13,000,000,000
Cost of Raw Materials	7,000,000,000
Net Value of Our Manufacturing Industries	6,000,000,000

The rapid growth of population in our cities, shown on page xii, is due to the enormous increase in our manufactures.

An examination of Table II will show a close relation between a city's population and the value of its manufactures. Notice how many cities that lead in manufactures lead also in population.

TABLE II.

THE TWENTY-FIVE LEADING MANUFACTURING CITIES OF THE UNITED STATES, THEIR FIVE LEADING INDUSTRIES AND APPROXIMATE VALUE OF PRODUCTS IN MILLION DOLLARS. CENSUS OF 1900.

CITIES.	LEADING INDUSTRIES AND VALUE IN MILLION DOLLARS.	VALUE OF ALL INDUSTRIES.
New York	Clothing (206), Castings and Machinery (41), Tobacco (38), Beer (39), Books and Papers (26), Coffee and Spice Roasting and Grinding (21)	$975,000,000
Chicago	Meat Packing (249), Clothing (46), Castings and Machines (45), Agricultural Implements (25), Iron and Steel (32), Cars and Carriages (23), Books and Papers (19)	889,000,000
Philadelphia	Castings and Machines (38), Woolens and Worsteds (4), Carpets and Rugs (22), Leather (18), Beer (13).	603,000,000
St. Louis	Tobacco and Cigars (26), Malt Liquors (12), Meat Packing (12), Castings and Machines (12), Clothing (9), Cars and Repairs, (8)	234,000,000
Boston	Sugar (16), Clothing (12), Books and Papers (10), Castings and Machines (9), Beer (8)	206,000,000
Pittsburg	Iron and Steel (97), Castings and Machines (11), Electrical Machines (14), Beer (4), Books and Papers (3).	203,000,000
Baltimore	Clothing (20), Tobacco (10), Canned Goods (8), Castings and Machines (6), Meat Packing (5)	161,000,000
Cincinnati	Clothing (14), Castings and Machines (12), Boots and Shoes (9), Distilled Liquors (9), Beer (6), Tobacco (5)	157,000,000
Cleveland	Iron and Steel (30), Castings and Machines (15), Meat Packing (8), Beer (4), Kerosene (3)	136,000,000
San Francisco	Sugar (11), Castings and Machines (8), Meat Products (5), Clothing (5), Flour (4)	133,000,000
Newark	Leather (11), Beer (8), Jewelry (7), Castings and Machines (6), Books and Papers (3)	127,000,000
Milwaukee	Castings and Machines (15), Beer (14), Leather (10), Iron and Steel (7), Flour (6)	124,000,000
Buffalo	Meat Products (10), Castings and Machines (7), Cars and Carriages (6), Linseed Oil (6), Soap and Candles (4)	122,000,000
Minneapolis	Flour (40), Lumber (15), Castings and Machines (3), Linseed Oil (2), Brick and Stone (2)	111,000,000
Detroit	Castings and Machines (9), Tobacco (6), Drugs (5), Iron and Steel (4), Meat Products (3)	101,000,000
Providence	Worsteds (17), Jewelry (13), Castings and Machines (9), Silverware (4), Cotton Goods (3)	88,000,000
Kansas City	Meat Packing (23), Soap and Candles (1), Castings and Machines (.66)	83,000,000
Louisville	Tobacco and Cigars (14), Cotton-seed Oil and Cake (5), Meat Packing (4), Castings and Machines (3), Leather (3)	79,000,000
Jersey City	Tobacco (6), Meat Packing (6), Soap and Candles (2), Cars and Carriages (3), Chemicals (2)	77,000,000
Rochester	Men's Clothing (11), Boots and Shoes (7), Castings and Machines (4), Flour (3), Tobacco (3)	69,000,000
Indianapolis	Meat Packing (13), Castings and Machines (6), Flour (4), Carriages and Cars (4), Furniture (2)	69,000,000
New Orleans	Sugar (23), Bags (3.4), Rice (Hulled) (3), Castings and Machines (2), Clothing (3)	64,000,000
Allegheny City	Iron and Steel (8), Castings and Machines (6), Pickles and Preserves (4.4), Meat Packing (4), Beer (1)	54,000,000
Worcester	Castings and Machines (8.5), Woolens (1.5), Wire (1.5), Boots and Shoes (1.6), Envelopes (1)	53,000,000
Paterson	Silk (26), Castings and Machines (6), Beer (2), Shirts (1), Meat Packing (1.3)	52,000,000

The Agricultural Production of the United States for the past (1905) fiscal year breaks all records for all countries.

A Six-Billion crop—$6,415,000,000! (1) Corn—our greatest crop—reaches our largest production and highest value. (2) Hay, wheat, and rice attain their highest value. (3) No crop but corn produces as large an income as does the dairy cow; milk and butter form the items of value next to corn in making up the total. (4) Next come hay, cotton, and wheat. (5) With wheat the hen competes for precedence; poultry products aggregate about as much in value as wheat.

Irrigation.—An illustration of what irrigation is accomplishing in arid regions of the West is furnished by the creation—on November 14 and November 21 in southern Idaho by the United States Government, on sites absolutely waste—of two new towns seven miles apart, Heyburn and Rupert, town lots being sold to highest bidders. It is expected that the great irrigating canals which the government is constructing at a cost of $3,000,000 will make the region very productive.

The Republic of Panama lies between the Caribbean Sea and the Pacific Ocean, and extends from Costa Rica to Colombia, about 480 miles. Its area is 31,570 square miles, a little greater than that of South Carolina. It is now one of the Central American States of North America. It includes the Isthmus of Panama—the narrow portion of the state north of the Gulf of Panama; the shortest distance across is 37 miles at San Blas Bay. It has an estimated population of about 340,000, combining Spanish, Indian, and Negro elements, and a few immigrants from the United States and from European countries.

The chief towns are the capital, Panama (pop. 30,000), Colon, Porto Bello, David (pop. 9,000), and Boca del Toro.

The surface is mountainous. The greatest elevation of the Sierra de Veragua is Mount Chiriqui, an extinct volcano, 11,260 feet high.

The soil is of great fertility. The tropical vegetation is luxuriant. One of the chief products is the banana, which grows freely on the lands adjacent to the Chiriqui Lagoon. Other products

are caoutchouc, coffee, cocoa-nuts, Brazil nuts, mahogany and other woods. Cattle raising is carried on in some of the provinces, and hides are an important article of export.

The Panama Railroad crosses the Isthmus from Colon to Panama, a distance of 47 miles.

The Inter-Oceanic Canal across the Isthmus is about to be constructed by the United States, which has from the State of Panama a grant of the use of a zone five miles wide on each side of the canal route from Colon to Panama.

United States Territories, etc.—The United States now (Dec., 1905) has six "Territories"—Hawaii being the sixth.

Arizona, New Mexico, Oklahoma, and Hawaii have fully organized territorial governments, and each is represented by a legate in Congress. Indian Territory has no general government, but maintains its tribal organizations. Alaska has a governor appointed by the President, and a judiciary system under special act of Congress, but no legislature.

Porto Rico is governed by a special act of Congress approved April 12, 1900. Under this act the lower house of the legislature is elected by the people, but the upper house, or, more properly, the "Executive Council," is composed of officers appointed by the President.

The Philippine Islands have a Governor and Commission appointed by the President, who exercise both executive and legislative functions. The bill for civil government, passed by Congress July 1, 1902, provides for an elected Philippine Assembly in the future, which will be the lower legislative body, and for two Philippine Commissioners, who shall represent the Archipelago at the seat of government in the United States.

Guam has a governor appointed by the President.

In Tutuila, with the two other small islands of the Samoan group belonging to the United States, the naval officer in command at Pago Pago is ex-officio governor.

Earthquake and Fire at San Francisco.—On April 18, 1906, there was a destructive earthquake at San Francisco, followed instantly by fire which utterly destroyed the most valuable parts of the city. It was the greatest calamity of its kind in the history of the United States. It is thought that about 300 persons were killed and more than 200,000 made homeless. The fire swept over a space of four square miles. Nearly all the great buildings of the city were ruined. Hundreds of millions of value were wiped out of existence. The spectacle was appalling.

Buildings wrecked by the earthquake. (From a photograph.)

Fissures made by earthquake. (From a photograph.)

As to the cause of the earthquake: Two main classes of earthquakes are recognized—(1) volcanic quakes and (2) dislocation quakes. In the latter, when rock strata have been broken by great rifts called faults, the portion on one side of the break has either risen or fallen with reference to that on the other side. When the strain becomes too great for the sides to resist, a slip occurs. Great masses of rock move along on other masses until, with a jar almost inconceivably great, they suddenly come to rest. The vibrations spread in every direction. The San Francisco earthquake is supposed to be of the second, or dislocation, class.

Vesuvius in Eruption.—The eruption of Vesuvius in April, 1906, seems to have been the most remarkable of all the eruptions that have occurred since the appalling disaster of 79 A. D., which overwhelmed Pompeii and Herculaneum. For ten days the mountain was in violent eruption. Many villages were overwhelmed by falling ashes and by streams of lava, some of them five hundred feet wide and forty feet deep. More than two thousand lives are reported to have been lost and many million dollars' worth of property destroyed. In Naples, twenty miles away, ashes fell in such quantities as to break the roofs of houses. Terrific explosions threw up large, incandescent rocks two thousand feet into the air. The whole summit was wreathed with flames, and a perpetual roar was heard. The cone of the volcano was encircled with electric phenomena. The top of the mountain was blown off, the present summit being some seven hundred feet lower than before the eruption.

Vesuvius, from a photograph taken during the recent eruption.

Cities of the United States having a Population of over 10,000.

Where dates are not given, the figures are from the Federal Census of 1900.

Adams, Mass.	12,486	Cincinnati, O.	325,902	Greenville, S. C.	11,860	Lynchburg, Va.	18,891	Ogden, Utah	16,313	Schenectady, N.Y. ('05)	
Adrian, Mich. ('04)	10,680	Cleveland, O. (est.)	450,000	Greenwich, Conn.	12,172	Lynn, Mass. ('05)	77,042	Ogdensburg, N.Y. ('05)	13,179	Scranton, Pa.	
Akron, O.	42,728	Clinton, Ia. ('05)	22,756	Guthrie, Okla.	10,006	McKeesport, Pa.	34,227	Oil City, Pa.	13,264	Seattle, Wash.	
Alameda, Cal.	16,464	Clinton, Mass.	13,667	Hackensack, N. J. ('05)	11,098	Macon, Ga.	23,272	Oklahoma, Okla.	10,037	Sedalia, Mo.	
Albany, N. Y. ('05)	98,379	Cohoes, N. Y. ('05)	24,183	Hagerstown, Md.	13,591	Madison, Wis. ('05)	24,301	Omaha, Neb.	102,555	Shamokin, Pa.	
Alexandria, Va.	14,528	Colorado Spgs., Colo.	21,085	Hamilton, O.	23,914	Mahanoy City, Pa.	13,504	Orange, N.J. ('05)	26,101	Sheboygan, Wis. ('05)	
Allegheny, Pa.	129,896	Columbia, Pa.	12,316	Hammond, Ind.	12,376	Malden, Mass. ('05)	38,037	Oshkosh, Wis. ('05)	30,575	Shenandoah, Pa.	
Allentown, Pa.	35,416	Columbia, S. C.	21,108	Hannibal, Mo.	12,780	Manchester, N. H.	56,987	Oswego, N. Y.	23,572	Sherman, Tex.	
Alpena, Mich. ('04)	12,400	Columbus, Ga.	17,614	Harrisburg, Pa.	50,167	Manila, P. I.	350,000	Ottawa, Ill.	10,588	Shreveport, La.	
Alton, Ill.	14,210	Columbus, O.	125,560	Harrison, N. J. ('05)	12,823	Manistee, Mich. ('04)	12,708	Ottumwa, Ia. ('05)	20,181	Sioux City, Ia. ('05)	
Altoona, Pa.	38,973	Concord, N. H.	19,632	Hartford, Conn.	79,850	Manitowoc, Wis. ('05)	12,733	Owensboro, Ky.	13,189	Sioux Falls, S. D. ('05)	
Amsterdam, N.Y. ('05)	23,943	Corning, N. Y. ('05)	13,515	Haverhill, Mass.	37,175	Mankato, Minn. ('05)	10,996	Paducah, Ky. ('05)	21,454	Somerville, Mass. ('05)	
Anderson, Ind.	20,178	Council Bluffs, Ia. ('05)	25,231	Hazleton, Pa.	14,230	Mansfield, O.	17,640	Parkersburg, W. Va.	11,703	South Bend, Ind.	
Ann Arbor, Mich. ('04)	14,509	Covington, Ky.	42,938	Helena, Mont.	10,770	Marietta, O.	13,348	Passaic, N. J. ('05)	37,837	South Bethlehem, Pa.	
Ansonia, Conn.	12,681	Cranston, R. I. ('05)	17,570	Henderson, Ky.	10,472	Marinette, Wis. ('05)	15,384	Paterson, N. J. ('05)	111,529	Southbridge, Mass.	
Appleton, Wis. ('05)	17,000	Cripple Creek, Col.	10,147	Hoboken, N. J. ('05)	65,468	Marion, Ind.	17,337	Pawtucket, R. I.	39,231	South Omaha, Neb.	
Asheville, N. C.	14,694	Cumberland, Md.	17,128	Holyoke, Mass. ('05)	49,934	Marion, O.	11,862	Peabody, Mass.	11,523	Spartanburg, S. C.	
Ashland, Wis. ('05)	14,519	Dallas, Tex.	42,638	Homestead, Pa.	12,554	Marlboro, Mass. ('05)	14,073	Peekskill, N. Y.	10,358	Spokane, Wash. ('05)	
Ashtabula, O.	12,949	Danbury, Conn.	16,537	Honolulu, Hawaii	39,306	Marquette, Mich. ('04)	10,665	Pensacola, Fla.	17,747	Springfield, Ill.	
Atchison, Kans. ('04)	16,935	Danville, Ill.	16,354	Hornellsville, N.Y. ('05)	13,259	Marshalltown, Ia. ('05)	12,045	Peoria, Ill.	56,100	Springfield, Mass. ('05)	
Athens, Ga.	10,245	Danville, Va.	16,520	Houston, Tex.	44,633	Massillon, O.	11,944	Perth Amboy, N.J. ('05)	25,895	Springfield, Mo.	
Atlanta, Ga.	89,872	Davenport, Ia. ('05)	39,797	Huntington, W. Va.	11,923	Mayagnez, P. R.	15,187	Petersburg, Va.	21,810	Springfield, O.	
Atlantic City, N.J. ('05)	37,593	Dayton, O.	85,333	Hyde Park, Mass.	13,244	Meadville, Pa.	10,291	Philadelphia, Pa. ('05)	1,438,318	Stamford, Conn.	
Attleboro, Mass.	11,335	Decatur, Ill.	20,754	Indianapolis, Ind.	169,164	Medford, Mass. ('05)	19,686	Phillipsburg, N. J. ('05)	13,852	Steelton, Pa.	
Auburn, Me.	12,951	Denison, Tex.	11,807	Ironton, O.	11,868	Melrose, Mass. ('05)	14,295	Pine Bluff, Ark.	11,496	Steubenville, O.	
Auburn, N. Y. ('05)	31,523	Denver, Col.	133,859	Ironwood, Mich. ('04)	10,019	Memphis, Tenn.	102,320	Piqua, O.	12,172	Stillwater, Minn. ('05)	
Augusta, Ga.	39,441	Des Moines, Ia. ('05)	75,625	Ishpeming, Mich. ('04)	11,623	Menominee, Mich. ('04)	11,096	Pittsburg, Kans. ('04)	14,368	Stockton, Cal.	
Augusta, Me.	11,683	Detroit, Mich. (est.)	400,000	Ithaca, N. Y. ('05)	14,615	Meriden, Conn.	24,296	Pittsburg, Pa. ('04)	321,616	Streator, Ill.	
Aurora, Ill.	24,147	Dover, N. H.	13,207	Jackson, Mich. ('04)	25,300	Meridian, Miss.	14,050	Pittsfield, Mass. ('05)	25,001	Superior, Wis. ('05)	
Austin, Tex.	22,258	Dubuque, Ia. ('05)	41,941	Jackson, Tenn.	14,511	Michigan City, Ind.	14,850	Pittston, Pa.	12,556	Syracuse, N. Y. ('05)	
Baltimore, Md. ('05)	545,000	Duluth, Minn. ('05)	64,342	Jacksonville, Fla.	28,429	Middletown, N.Y. ('05)	14,516	Plainfield, N. J. ('05)	18,468	Tacoma, Wash. ('05)	
Bangor, Me.	21,850	Dunkirk, N. Y. ('05)	15,251	Jacksonville, Ill.	15,078	Milford, Mass.	11,376	Plymouth, Pa.	13,649	Tampa, Fla.	
Bath, Me.	10,477	Dunmore, Pa.	12,583	Jamestown, N. Y. ('05)	26,160	Millville, N. J. ('05)	11,884	Ponce, P. R.	27,952	Taunton, Mass. ('05)	
Baton Rouge, La.	11,269	E. Liverpool, O.	16,485	Janesville, Wis. ('05)	13,770	Milwaukee, Wis. ('05)	312,948	Pontiac, Mich. ('04)	10,884	Terre Haute, Ind.	
Battle Creek, Mich. ('04)	22,213	Easton, Pa.	25,238	Jeffersonville, Ind.	10,774	Minneapolis, Minn. ('05)	261,974	Port Huron, Mich. ('04)	20,028	Tiffin, O.	
Bay City, Mich.	27,628	E. Orange, N. J. ('05)	25,175	Jersey City, N. J. ('05)	232,669	Mobile, Ala.	38,469	Portland, Me.	50,145	Toledo, O.	
Bayonne, N. J. ('05)	42,262	E. Providence, R.I. ('05)	13,750	Johnstown, N. Y.	10,130	Moline, Ill.	17,248	Portland, Ore.	90,426	Topeka, Kans. ('04)	
Beaver Falls, Pa.	10,054	E. St. Louis, Ill.	29,655	Johnstown, Pa.	35,936	Montclair, N. J. ('05)	16,370	Portsmouth, N. H.	10,637	Traverse, Mich. ('04)	
Belleville, Ill.	17,484	Eau Claire, Wis. ('05)	18,737	Joliet, Ill.	29,353	Montgomery, Ala.	30,346	Portsmouth, O.	17,870	Trenton, N. J. ('05)	
Beloit, Wis. ('05)	12,855	Elgin, Ill.	22,433	Joplin, Mo.	26,023	Morristown, N. J. ('05)	12,146	Portsmouth, Va.	17,427	Troy, N. Y. ('05)	
Berkeley, Cal.	13,214	Elizabeth, N. J. ('05)	60,509	Kalamazoo, Mich. ('04)	29,782	Mt. Carmel, Pa.	13,179	Pottstown, Pa.	13,696	Union, N. J.	
Beverly, Mass. ('05)	15,223	Elkhart, Ind.	15,184	Kankakee, Ill.	13,595	Mt. Vernon, N. Y. ('05)	25,006	Pottsville, Pa.	15,710	Utica, N. Y. ('05)	
Biddeford, Me.	16,145	Elmira, N. Y. ('05)	34,693	Kansas City, Kans. ('04)	57,710	Muncie, Ind.	20,942	Poughkeepsie, N.Y. ('05)	25,379	Vicksburg, Miss.	
Binghamton, N.Y. ('05)	42,040	El Paso, Tex.	15,906	Kansas City, Mo.	163,752	Muscatine, Ia. ('05)	15,087	Providence, R. I. ('05)	198,635	Vincennes, Ind.	
Birmingham, Ala.	38,415	Elwood, Ind.	12,950	Kearney, N. J. ('05)	13,601	Muskegon, Mich. ('04)	20,897	Pueblo, Col.	28,157	Waco, Tex.	
Bloomfield, N. J.	11,668	Erie, Pa.	52,733	Kenosha, Wis. ('05)	16,235	Nanticoke, Pa.	12,116	Quincy, Ill.	36,252	Walla Walla, Wash.	
Bloomington, Ill.	23,286	Escanaba, Mich.	11,098	Keokuk, Ia.	14,604	Nashua, N. H.	23,898	Quincy, Mass. ('05)	28,076	Waltham, Mass. ('05)	
Boston, Mass. ('05)	595,380	Evanston, Ill.	19,259	Key West, Fla.	17,114	Nashville, Tenn.	80,865	Racine, Wis. ('05)	32,270	Warwick, R. I. ('05)	
Braddock, Pa.	15,654	Evansville, Ind.	59,007	Kingston, N. Y. ('05)	25,557	Natchez, Miss.	12,210	Raleigh, N. C.	13,643	Washington, D.C. ('05)	
Bradford, Pa.	15,029	Everett, Mass. ('05)	29,111	Knoxville, Tenn.	32,637	Naugatuck, Conn.	10,541	Reading, Pa.	78,961	Waterbury, Conn.	
Bridgeport, Conn.	70,996	Fall River, Mass. ('05)	105,762	Kokomo, Ind.	10,609	New Albany, Ind.	20,628	Revere, Mass.	10,395	Waterloo, Ia. ('05)	
Bridgeton, N. J. ('05)	13,624	Findlay, O.	17,613	La Crosse, Wis. ('05)	29,078	Newark, N. J. ('05)	283,289	Richmond, Ind.	18,226	Watertown, N. Y.	
Brockton, Mass. ('05)	47,794	Fitchburg, Mass. ('05)	33,021	Lafayette, Ind.	18,116	Newark, O.	18,157	Richmond, Va.	85,050	Watervliet, N. Y. ('05)	
Brookline, Mass.	19,935	Flint, Mich. ('04)	64,884	Lancaster, Pa.	41,459	NewBedford, Mass. ('05)	74,362	Roanoke, Va.	21,495	Wausau, Wis.	
Buffalo, N. Y. ('05)	376,619	Fond du Lac, Wis. ('05)	17,284	Lansing, Mich. ('04)	20,276	New Britain, Conn.	25,998	Rochester, N. Y. ('05)	181,678	W. Bay City, Mich ('05)	
Burlington, Ia. ('05)	25,318	Fort Dodge, Ia. ('05)	14,369	Laredo, Tex.	13,429	N.Brunswick, N.J. ('05)	23,133	Rockford, Ill.	31,051	Westfield, Mass.	
Burlington, Vt.	18,640	Fort Scott, Kans. ('04)	14,081	La Salle, Ill.	10,446	Newburg, N. Y. ('05)	26,500	Rock Island, Ill.	19,493	W. Hoboken, N. J. ('05)	
Butler, Pa.	10,853	Fort Smith, Ark.	11,587	Lawrence, Kans.	10,862	Newburyport, Mass ('05)	14,675	Rome, N. Y. ('05)	16,567	Weymouth, Mass.	
Butte, Mont.	30,470	Fort Wayne, Ind.	45,115	Lawrence, Mass. ('05)	70,050	Newcastle, Pa.	28,339	Rutland, Vt.	11,499	Wheeling, W. Va.	
Cairo, Ill.	12,566	Fort Worth, Tex.	26,688	Leadville, Col.	12,455	New Haven, Conn.	108,027	Sacramento, Cal.	29,282	Wichita, Kans. ('04)	
Cambridge, Mass. ('05)	97,434	Framingham, Mass.	11,302	Leavenworth, Kan. ('04)	22,791	New London, Conn.	17,548	Saginaw, Mich. ('04)	46,610	Wilkesbarre, Pa.	
Camden, N. J. ('05)	83,363	Freeport, Ill.	13,258	Lebanon, Pa.	17,628	New Orleans, La. (est.)	350,000	St. Joseph, Mo.	102,979	Wilkensburg, Pa.	
Canton, O.	30,667	Fresno, Cal.	12,470	Leominster, Mass.	12,392	Newport, Ky.	28,301	St. Louis, Mo. (est.)	700,000	Williamsport, Pa.	
Carbondale, Pa.	13,536	Galena, Kans.	10,155	Lewiston, Me.	23,761	Newport, R. I. ('05)	25,039	St. Paul, Minn. ('05)	197,023	Wilmington, Del.	
Cedar Rapids, Ia. ('05)	28,759	Galesburg, Ill.	18,607	Lexington, Ky.	26,369	Newport News, Va.	19,635	Salem, Mass. ('05)	37,627	Wilmington, N. C.	
Central Falls, R. I. ('05)	19,446	Galveston, Tex.	37,789	Lima, O.	21,723	New Rochelle, N.Y. ('05)	20,480	Salt Lake City, Utah	53,531	Winona, Minn. ('05)	
Charleston, S. C.	55,807	Gardner, Mass.	10,813	Lincoln, Neb.	40,169	Newton, Mass. ('05)	36,827	San Antonio, Tex.	53,321	Winston, N. C.	
Charleston, W. Va.	11,099	Geneva, N. Y. ('05)	12,250	Little Falls, N. Y. ('05)	11,123	New York, N. Y. ('05)	4,014,304	San Diego, Cal.	17,700	Woburn, Mass. ('05)	
Charlotte, N. C.	18,091	Georgetown, D. C.	14,549	Little Rock, Ark.	38,307	Niagara Falls, N.Y. ('05)	26,559	Sandusky, O.	19,664	Woodbridge ('05)	
Chattanooga, Tenn.	30,154	Glens Falls, N. Y.	12,613	Lockport, N. Y. ('05)	17,552	Nome, Alaska	12,488	San Francisco, Cal.	342,782	Woonsocket, R. I. ('05)	
Chelsea, Mass. ('05)	37,289	Gloucester, Mass. ('05)	26,001	Logansport, Ind.	16,204	Norfolk, Va.	46,624	San Jose, Cal.	21,500	Worcester, Mass. ('05)	
Chester, Pa.	33,988	Gloversville, N. Y. ('05)	18,692	Long Branch, N. J. ('05)	12,183	Norristown, Pa.	22,265	San Juan, P. R.	32,048	Yonkers, N. Y.	
Cheyenne, Wyo.	14,087	Gr'd Rapids, Mich. ('04)	95,718	Lorain, O.	16,028	No. Adams, Mass. ('05)	22,150	Saratoga Spgs., N. Y.	13,534	York, Pa.	
Chicago, Ill. (est.)	2,000,000	Great Falls, Mont.	14,930	Los Angeles, Cal.	103,479	Northampton, Mass ('05)	19,957	Sault Ste. Marie, Mich.		Youngstown, O.	
Chicopee, Mass. ('05)	20,191	Green Bay, Wis. ('05)	22,854	Louisville, Ky. ('05)	232,456	Norwich, Conn.	17,251	('04)	11,442	Zanesville, O.	
Chillicothe, O.	12,976	Greensboro, N. C.	10,035	Lowell, Mass. ('05)	94,889	Oakland, Cal.	66,960	Savannah, Ga.	54,244		

The Shenandoah Valley at Luray.

als and marine life. The remains of the corals and shells are now found in the limestone beds of the valley. Some of the most striking natural features of the State are connected with the Great Valley.

The Caverns of Luray, in Page County, are said to surpass in beauty all others in the State. Weyer's Cave, in Augusta County, has a vast labyrinth of grottoes and galleries, the largest of its apartments being 90 feet high and 350 feet long. "Madison's Cave" and "Blowing Cave" are also well known.

These caves were dissolved and washed out in the soft limestone by water. Water from the surface still filters through the rock and drips into the caves. This water contains carbonate of lime (or dissolved limestone), and as it drips slowly into these subterranean chambers the limestone is deposited and hardens into beautiful shapes called stalactites and stalagmites.

The Natural Bridge, not far from the noted James River Gap, has long been regarded as one of the most remarkable natural features in America. It was once a cave, of which most of the roof has washed away, leaving a single span of rock across the opening. (See page 40 of the MANUAL.)

Warm Springs Valley and Alleghany Ranges: on the right is Flag Rock—4,000 feet high.

The Alleghany Ranges.—West of the Valley the ranges rise to the number of a dozen or more. These ranges have different names, though they are all included under the one general name of the Alleghany Mountains. They are made up of newer and softer rock, and are younger than either the Blue Ridge or the Great Valley. Generally the northwest faces of the ridges are gentle slopes, but their southeastern faces are often steep and crowned with precipices of sandstone or other rocks. As compared with the Blue Ridge, the scenery of the eastern faces of the Alleghanies is very rugged.

High Knob, on the border between Virginia and West Virginia, is 4,200 feet high; Elliott's Knob, twenty-four miles from Staunton, is 4,473 feet; and at New River Cañon the general elevation is 3,000 feet.

In southwestern Virginia the parallel ridges pass into the Cumberland Plateau.

The Piedmont.—In Virginia this province is about fifty miles wide near the Potomac and one hundred and fifty miles wide at the southern border of the State. Its western boundary is the Blue Ridge, its eastern the Fall-line, along which the principal rivers descend abruptly to the Coastal Plain. In general, its surface is rolling. Sometimes it is cut rather sharply by the channels of the larger streams in passing through it. Occasionally it rises into prominent knobs or ridges. Monticello, the home of Jefferson, is built on one of these ridges.

The Building of the Land.—Most of the rocks are schists and gneisses, tilted at high angles. They are as old as the quartzites of the Blue Ridge, and may be considered the eastern extension of the Appalachian strata, only more completely altered by the heat and pressure at the time the great layers of rock were crumbled and folded into the Appalachian Mountains. Occasionally we find granite, as about Richmond; sometimes slate, as in Goochland and Powhatan counties, and sometimes the hard quartzite stands out as in Monticello.

The whole Piedmont Province is an illustration of the wonderful wearing, cutting power of rain and water, by which layers of rock-matter miles in thickness were cut down and carried away. After the surface had been cut down so that it looked as it does at present, the land again sank below the level of the sea, and while it was under water, deposits of ground-up rock material were made upon it. It was afterward raised again, and these deposits are now seen as brown sandstone or brown stone, such as is used extensively for building, and also as the rocks called breccia found around Leesburg, and used for decorative purposes in the United States Capitol and other buildings. In some localities are coal-beds.

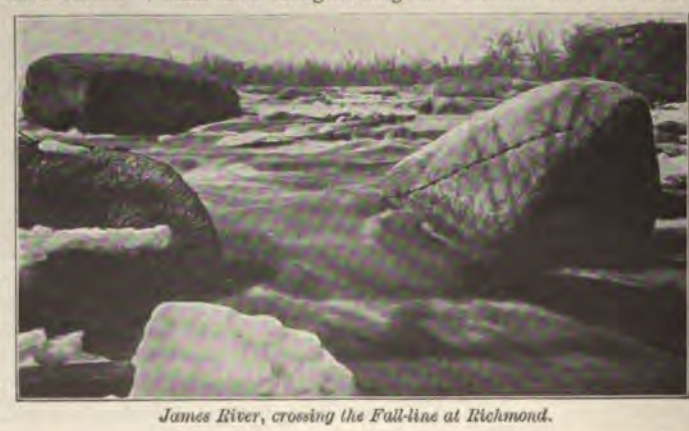
Hotchkiss subdivides the Piedmont into "Piedmont" and "Midland." The Midland and Tidewater counties south of James River are called "Southside."

Other natural divisions are the "Eastern Shore," the "Northern Neck," the "Peninsula," and "Norfolk Peninsula," which lies between Elizabeth River and the Atlantic.

The Fall-line.—The Fall-line forms the eastern border of the Piedmont Province, and is one of the most strongly marked boundaries of such a province on the globe. On the Piedmont side of this line the rocks are tilted, which shows that they were folded and crumpled ages ago, while in layers. They are granites and other crystalline rocks, which shows that at that time they were changed by intense heat. East of the Fall-line the rocks are horizontal beds of clay, sand, etc., little altered from what they were when they were first deposited at the bottom of the overlying ocean. On the Piedmont side the waterways are rapid streams, rushing through narrow, deep channels which they have cut for themselves in the hard rock; on the other side the water is sluggish and rises and falls with the tide. On the Piedmont side the surface of the land, as we see it, has been carved out of a plateau by running water; on the other, the irregularities of surface are largely those produced by wave and current action below the level of the sea. On the Piedmont side the land is rising at such a rate that the rapid streams are unable to keep their channels down to the level of the sea; on the other side the land is sinking at such a rate that the sediment deposited is not sufficient to build up the channel bottoms above the level of the sea.

Although this natural boundary is most marked in Virginia, it is found in all States along the Atlantic and Gulf Coast.

Early relics found prove that the first inhabitants of this country lived and built their villages along the Fall-line near the head of tidewater in the rivers, where hunting and fishing were easy. After them the white settlers sailed up the easily navigated rivers to the falls, where they built forts and stockades, and, later, towns. With the growth of population and extension of settlements, trails were made across the lowlands between these forts and settlements, and in time these trails became a continuous stage road. Virginia once



James River, crossing the Fall-line at Richmond.

The Potomac and railroad bridge from Maryland Heights (on left) to Harper's Ferry, W. Va. Another bridge crosses the mouth of the Shenandoah to Loudoun Heights, Va. (on right.)

Ferry to its mouth. At Harper's Ferry it passes through a picturesque water-gap, with Maryland Heights on the north and Loudoun Heights on the south, and a few miles below it passes through a similar gap.

Some fifteen miles below Harper's Ferry the river enters a belt of younger rock (Triassic) which is softer than the older rocks of the Appalachian, and here it has cut a deeper channel and the current is not so rapid. Ten miles above Great Falls it reënters the hard rocks of the Piedmont belt, and once more we find the channel broad and shallow. In places it can be waded at ordinary stages, though it is from a quarter to a third of a mile wide. At Great Falls it passes in a cataract over picturesque ledges twenty to forty feet high, according to the stage of the water, and then flows, in a series of rapids, for a distance of twelve miles, to Little Falls, five miles above Washington. Here, in a length of fifty yards, it dashes down a chute of twenty feet. The water then becomes slack, the channel widens out and it becomes a tidal estuary. From Washington to Alexandria the average width of the river is over a mile, and it gradually widens to seven or eight miles off Point Lookout, where it joins the Chesapeake.

On the Shenandoah River.

The ***Shenandoah,*** like the Potomac, generally ripples over rocky ledges in a broad channel. The main river and its two principal branches drain the Valley from the low divide a few miles south of Staunton to the Potomac at Harper's Ferry.

In its lower course the Shenandoah flows at the bottom of a narrow valley or cañon cut sharply in the limestone to an average depth of 200 feet. The sides of this cañon are steep and often precipitous, its bluffs rising to the general level of the valley. This cañon enters a similar cañon occupied by the Potomac.

These cañons tell the story of a time ages ago when the land, after long remaining stationary, was lifted some 200 feet and tilted toward the sea in such a manner as to quicken the flow and increase the power of the streams in cutting away their beds. (Other waterways of the Middle Atlantic Slope tell the same story in similar cañons with rugged bluffs rising to the general level of the land, but the record is clearest in the Shenandoah and Potomac valleys.)

The ***Rappahannock*** is a typical river of the class which rises in the Piedmont Plateau and flows through the Coastal Plain. Its chief tributary is the Rapidan (Rapid Anne). In its upper part the Rappahannock Valley winds and curves, is usually less than 200 feet deep, and the bluffs or hills which confine it are rounded.

The channel of the river is of moderate width and depth. Below the mouth of Eastham River the Rappahannock crosses a belt of younger rock (Triassic), which is softer than the older rocks of the Appalachian Province, and here the channel is broader and deeper, the valley is wider, and the bluffs are lower. Twenty-five miles above Fredericksburg it again enters the harder belt of Piedmont rock (the gneisses). Here the bluffs become rugged, and the channel is broad and shallow like the channel of the Potomac. About two miles above Falmouth the river begins to pass through the Fall-line rapids, and it descends in a series of rapids and cascades about one hundred and twenty-five feet. At the foot of the last fall the current becomes slack, and the channel widens out. At its mouth it is three miles wide.

The ***Mattapony,*** formed by the junction of four Piedmont rivers or "runs"—the Mat, the Ta, the Po and the Ny; the ***Pamunkey,*** formed by the North Anna and South Anna; the ***Chickahominy,*** the ***Blackwater,*** and the ***York***—are all typical Coastal Plain rivers. The York is a tidal estuary on which sea-going vessels ply.

The ***James*** is the best known and most typical river of Virginia. Its waters gather among the Alleghany Mountains. It passes in narrow gorges through several ranges before it enters the Great Valley, in Botetourt County. Here it resembles the Shenandoah, and is joined by tributaries draining a considerable length of the limestone belt. It leaves the Great Valley through a notable water-gap in the Blue Ridge, at Balcony Falls, where, passing through a picturesque series of cataracts and rapids, it enters the Piedmont. It is the largest waterway of that province.

The Rappahanock east of Fredericksburg—showing bluffs and terraces.

Throughout the Piedmont its character is much like the Rappahannock above Fredericksburg, except that its valley is wider and deeper and the descent through the great falls above Manchester is more rapid and more broken into picturesque cataracts by the hard ledges of the Richmond granite. At the last fall it tumbles into a slack-water basin. In its lower course it averages two or three miles in width, and at its mouth widens into a bay called Hampton Roads.

For a distance of some seventy-five miles on the river (twenty-five miles by land) the channel curves in great loops, which interfere with shipping. From a point nine miles by river above Bermuda Hundred the rigging of schooners lying at the wharf at this place can be seen across the isthmus. During the war between the States, a Federal general dug a trench across the isthmus a few hundred feet long (known as Dutch Gap Canal) which cut off a loop of over seven miles.

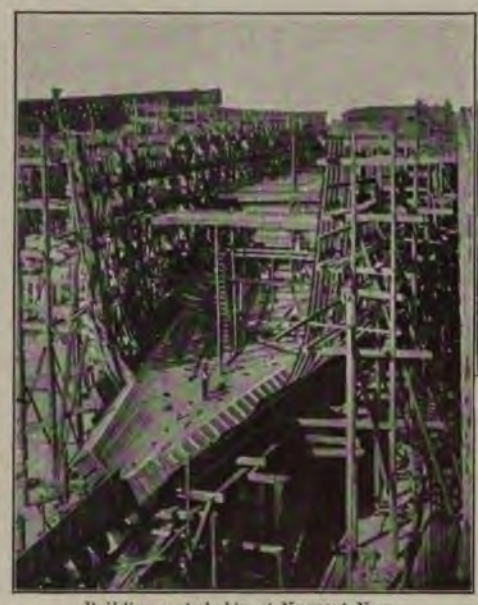
The ***Roanoke,*** next to the James, is the principal river of Virginia. It rises in Montgomery County, and cuts through the Blue Ridge in Roanoke Water Gap. From this point it is known as the ***Staunton*** until it joins the ***Dan,*** also a Piedmont river, partly in Virginia and partly in North Carolina. From the junction it again known as the Roanoke.

The ***Appomattox,*** the ***Nottoway*** and the ***Meherrin*** are typical Piedmont rivers, much like the Rappahannock.

New River represents a type different from other Virginia rivers. It

The Falls of the Appomattox at Petersburg.

of tobacco. The value of the crop of hay and forage also exceeds that of tobacco. Wheat is a staple crop in the Valley and in the Midland, and is the fourth crop in value. Oats, buckwheat, rye and barley also grow in the same section.



Building a steel ship at Newport News.

The cultivation of small fruits and early vegetables is an important interest, and brings millions of dollars into the State. These are grown in Accomac County, and in the counties around Norfolk. Peanuts are the leading crop in the Tidewater belt. Only a small part of the State is devoted to cotton, and nine-tenths of the crop is grown in the counties of Brunswick, Greensville, Southampton, Mecklenburg and Sussex.

The live stock and dairy products of the State are of great value. The live stock sold brings more money to the farmers than the entire tobacco crop, and the value of milk, butter and cheese produced annually is only a little less than the total value of the tobacco crop. Special attention is given to live stock in the Shenandoah Valley and in the northern Piedmont, where blue grass and other fine grasses flourish. Many fine horses are bred in Loudoun and Fauquier counties.

The value of the poultry and eggs is nearly equal to the value of the dairy products, and the counties of Rockingham and Shenandoah each report over a million dozen eggs sold per year. A large part of the dairy and poultry products are used in the State.

Manufactures.—Virginia has come to be a great manufacturing State. While the capital invested in manufacturing is only about one-third of that invested in agriculture, the true net value of all the manufactured products exceeds the value of all the agricultural products, including live stock, by more than twelve million dollars. This represents a wonderful growth in the last ten years.

Interior of cotton mill, Roanoke.

Tannery at Luray.

The quantity of tobacco grown in Virginia very naturally led in early days to the establishment of tobacco factories, and these were the first manufacturing interests of the State. The manufacture of tobacco has grown steadily, being nearly double the value of any other interest.

Building engines in the Richmond Locomotive Works.

In consequence of the large corn and wheat crop, flour and grist mills have always been important manufacturing interests, and flour and corn meal rank next to tobacco in value.

Through the Dismal Swamp and through the canals, large quantities of timber are brought to Norfolk and Portsmouth, to be sawed into lumber. Near these cities there are a number of saw mills and planing mills, and plants for manufacturing sash, doors and blinds. The immense forests of hard woods which are found in the Appalachian Province are among the most valuable resources of the State, and the building of railroads into the mountains in recent years has brought the timber into market, so that the value of the lumber products has more than doubled in the last ten years.

Iron furnace at Clifton Forge.

The railroad companies have immense shops for building and repairing cars and engines. There are also foundry and machine shops for making machinery used in the manufacturing establishments and transportation lines of the State.

Columbian Paper Company, Buena Vista.

The first iron furnace in the United States was established in Virginia nearly two hundred years ago. Since that time the State has had furnaces, foundries and machine shops. Within the last twenty years the number of plants has increased very largely. The manufacture of steel ships at Newport News, Richmond, and in the Navy Yard at Portsmouth is the leading iron industry.

The abundance of oak bark used in tanning has quadrupled the manufacture of leather in the last ten years. The manufacture of commercial fertilizers is also an important interest. Besides these, there are mills for the manufacture of woolen and cotton goods, furniture factories, shoe factories, and establishments for roasting and grinding coffee and spices.

Coke ovens at the Pocahontas Coal Mines.

Mining.—Virginia is rich in coal and iron, and there are also mines of gold, lead, copper, zinc, barytes, manganese and salt. The first gold and the first coal mined in the United States came from Virginia, and many years ago Philadelphia got her coal from this State. Granite, sandstone, limestone, marble and slate, suitable for building, are quarried, and beds of marl and gypsums for fertilizing are found.

Bituminous or soft coal, as it is called, is found in the counties of Chesterfield, Henrico, Powhatan, Goochland and Cumberland, but the great coal deposits of the State are found in the mountains of the southwest. Iron ores abound in the Valley counties, in the Piedmont counties, and in the Appalachian counties of the west and southwest. There are large manganese mines in the Shenandoah Valley. Gold is mined in Louisa County, also in Spottsylvania. Zinc is also mined in the southwest. Salt has long been mined, and the salt works at Saltville are noted.

Commerce.—The tobacco of Virginia is not used at home, but must be sold. The trade in this article was the beginning of the commerce of the State. To it we may now add the lumber, the minerals and the manufactured articles which are produced in the State, and these alone would make a most valuable commerce. But the splendid harbor at Hampton Roads, with the great commercial cities clustered around it, makes a natural shipping point for a large section of the Mississippi Valley, and a port of entry for goods from foreign countries, while the business enterprise of the commercial houses of the cities of Virginia has built up all over the country an extensive commerce in goods of every character. All these together combine to give Virginia high rank in the value of her commerce.

Selling tobacco in Danville.—Steamship at Norfolk.

History.—The land where we now live was claimed by Spain as a part of Florida, and in 1526 a Spanish colony under d'Ayllon built a town on the James River, not far from where Richmond now stands. These were the first white men who ever lived on our soil, but the settlement was soon abandoned.

Nearly sixty years later, Sir Walter Raleigh sent an expedition which explored the coast, and the name Virginia was given to the country from Canada to Florida, as a compliment to Elizabeth, who loved to be called the "Virgin Queen." The Cabots had explored parts of that coast for her grandfather, Henry VII., and so the queen claimed the country.

Sir Walter Raleigh sent out a colony, but it was lost, and no other attempt at settlement was made by the English until James I. became king. In 1606 he granted two charters, one to the London Company, for a settlement in southern Virginia, and one to the Plymouth Company, for a settlement in northern Virginia. In 1607 one hundred and five colonists in three ships, under Christopher Newport, was sent out by the London Company. They founded Jamestown, the first permanent English settlement made in America.

More colonists were sent out, but the colony suffered from famine and sickness, and would probably have been a failure except for the wisdom and energy of Captain John Smith. At the end of three years he was obliged to return to England, and within six months the colony was reduced from more than five hundred persons to sixty, and they had food for only fourteen days. They started back to England, but at the mouth of the James River they met the new Governor, Lord Delaware, with three ships, filled with emigrants and supplies.

That same year, 1609, a new charter was given to the London Company, granting to them all the land on the coast, two hundred miles north and south from Old Point Comfort, and "up into the land throughout, from sea to sea, west and northwest." Lay this off on your maps of North America, and you will see how large was the land given to Virginia.

From this time the colony prospered. No gold was found, but the people of Europe had learned to smoke tobacco, and the early Virginians soon found that the cultivation of tobacco brought them in almost as much money as gold mines. Pocahontas, the Indian Princess, married John Rolfe, and as long as she lived there was no trouble with the Indians. In 1619 the first negro slaves were brought to Virginia by a Dutch ship and sold to the planters.

In July, 1619, the first legislature was called together at Jamestown by Governor Yeardley. This was the beginning of representative government in America. There were twenty-two representatives elected by the people, who made up the "House of Burgesses," or Lower House. The Governor's Council took the place of the Senate. Five years later Virginia became a royal province.

When the English people under Cromwell took up arms against Charles I., the son of James I., and put him to death, the Virginia planters were loyal to the king, and sent for his son, Charles II., to come to "his old dominion of Virginia." At this time many royalists came from England to Virginia, among others the ancestors of Washington. When Charles II. was restored to the throne he added the coat of arms of Virginia to his escutcheon, and this is believed to be the reason why Virginia is called the "Old Dominion."

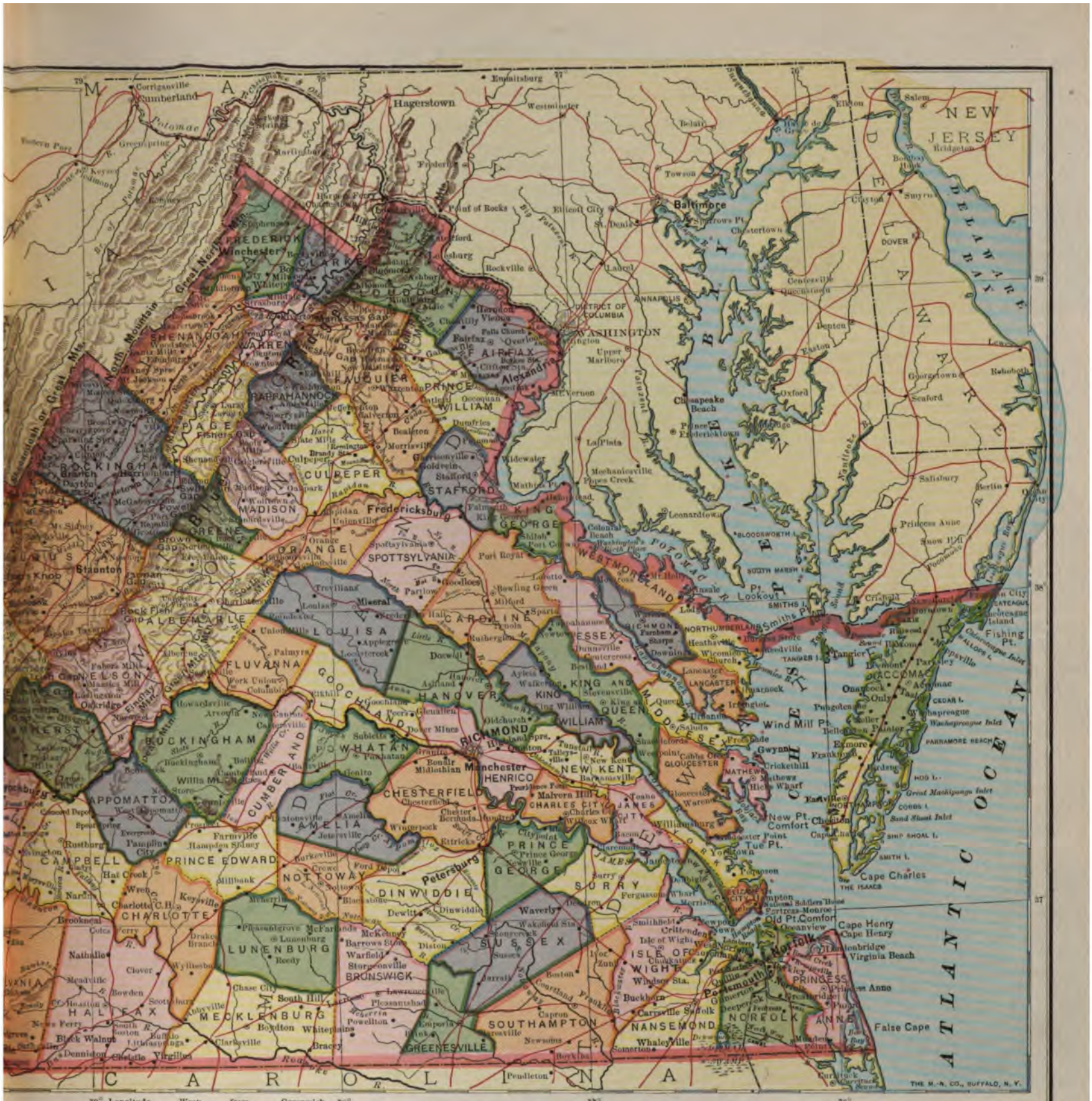
But Charles II. did not treat the Virginians fairly. A few years later the Navigation Act passed by Parliament, the heavy taxes, and dissatisfaction with Governor Berkeley produced a great deal of discontent, and in 1676 many planters took up arms under Nathaniel Bacon. This is known as Bacon's Rebellion.

QUESTIONS ON THE MAP.

Position and Outline.—What State bounds Virginia on the north and east ? What two States on the north and west ? What States south ? What body of water on the east ? What river forms the northeastern boundary ? Through how many degrees of longitude does the State extend ? Of latitude ? Where does the parallel of 37° cross the State ? Which way is the State the longest ? What part is widest ? Measure by the scale of miles the greatest length of the State. What great bay divides the eastern portion of the State ? How long is it ? What neck of land between the Potomac and Rappahannock ? (See "Other Natural Divisions," p. 2.) Between the York and the James ? What two capes at the mouth of Chesapeake Bay ? What two islands in the Chesapeake ? What sound east of Tangier Island ?

Surface.—What portion of the State is mountainous ? To what system do the mountains of Virginia belong ? Ans. *The Appalachian.* What mountain ridge crosses the State ? What two ranges separate Virginia and West Virginia ? What mountains between Kentucky and Virginia ? What is the general direction of the mountains in Virginia ? Where are the Peaks of Otter ? In what county is Balsam Mountain, the highest peak in the State ? White Top Mountain ? Where is Walker's Mountain ? What mountains separate Shenandoah and Page Counties ? How is the Blue Ridge broken ? Ans. *By numerous gaps.* Where is Manassas Gap ? Fisher's Gap ?

Rivers, etc.—What body of water receives most of the drainage of this State ? What rivers flow into Chesapeake Bay ? Describe this bay. What is the longest river wholly within the State ? Describe the course of the James. Of the Potomac, as far as shown on the map. Of the Shenandoah. Rappahannock. York.



New. Staunton. Roanoke. Name the two principal tributaries of the Roanoke. What three rivers break through the Blue Ridge? Name the rivers that flow into Tennessee. Into what river do they flow? (See map of Tennessee, p. 43.) What rivers have railroads beside them? Where are Hampton Roads? Where is the Dismal Swamp? Drummond Lake?

Counties.—What counties border on West Virginia? On Kentucky? Tennessee? North Carolina? On the Chesapeake? Which is the most western county? The most northern? The most eastern? What counties constitute the "Northern Neck"? What two counties are called the "Eastern shore"? What counties border on the Atlantic Ocean?

Cities and Towns.—What is the capital of Virginia? How is it situated? What is its latitude and longitude? What is the principal seaport? How is it situated? (See map of Norfolk and vicinity.) What city opposite Norfolk? Describe the situation of Petersburg. Lynchburg. Roanoke. Alexandria. Danville. Manchester. Fredericksburg. Winchester. Staunton. Charlottesville. Newport News. Harrisonburg. Lexington. Wytheville. Salem. Woodstock. Abingdon. Farmville. Hampton. Suffolk. Leesburg. Culpeper. Marion. Bedford City. Boydton. Williamsburg. Jamestown and Yorktown. For what historic events are these last two places famed? Where is the Natural Bridge? Weyer's Cave? Luray Caves?

Local Geography.—What is the name of the county in which you live? In what division of the State is it? Bound it. What mountains traverse or border it? What river or rivers flow through it? Name and locate the county seat. In what direction and how far is it from the capital of the State? Does any railroad enter or cross the county?

Old houses in Yorktown built in Colonial days.

William and Mary College, named in honor of the King and Queen of England, was founded in 1693, at Williamsburg, under Governor Francis Nicholson. Five years later, 1698, Williamsburg became the capital of the province.

In 1716 Governor Alexander Spotswood, one of the best governors Virginia ever had, turned his attention to the mountain and valley region. He was instrumental in establishing the first iron furnace in America. Up to this time nearly all the people lived in the Tidewater district, and the old families had splendid homes on the banks of the rivers, many of which still remain. Of these old historic homes, Westover (the home of the Byrds), Shirley, Upper and Lower Brandon and Weyanoke are justly famous.

After Governor Spotswood's time, the Valley was settled up rapidly. A large tract of land in the northern section of Virginia had been granted to Earl Loudoun, and his son, Lord Fairfax, came to America and made his home at Greenway Court, now in Clarke County. George Washington, then quite a youth, was employed in surveying this land.

The settlements beyond the mountains brought on the French and Indian War, in which George Washington commanded the Virginia troops, and his coolness and bravery saved Braddock's army from destruction after its defeat in 1755 at Fort Duquesne.

When the Stamp Act was passed, the first defiance came from Virginia, where Patrick Henry, a young lawyer from Louisa County, offered a series of resolutions in protest.

When the tax was levied upon tea, the Virginia Assembly denounced the act and was dissolved by the Governor, but the members continued to meet at the famous old Raleigh Tavern in Williamsburg. When the port of Boston was closed and the charter of Massachusetts annulled, a convention was held in the old St. John's Church in Richmond, where Patrick Henry made the speech in which he exclaimed "Give me liberty, or give me death."

Westover—home of Colonel Byrd.

George Washington was elected to command the Continental Army, Virginians were leaders in the Continental Congress, and Thomas Jefferson wrote the Declaration of Independence.

On the 25th of May, 1776, the Virginia Convention instructed her delegates to the Continental Congress to declare the colonies free and independent states. On the 15th of June the Virginia Convention adopted the Bill of Rights, and two weeks later, five days before the Declaration of Independence, adopted the Constitution under which the State government was organized, with Patrick Henry as its first governor. The last royalist governor, Lord Dunmore, had been driven from the State.

Norfolk was captured and burned by the British early in the war. Portsmouth was plundered and Suffolk burned in 1779. That year Richmond became the capital. In 1781, while Thomas Jefferson was Governor, Richmond was captured and burned by the British under Benedict Arnold. Petersburg was also captured. In the same year an expedition under Tarleton went to Charlottesville to capture the legislature, in session there, but the members were warned in time. Jefferson, at Monticello, very narrowly escaped.

The greatest victory of the war was won at Yorktown, on Virginia soil, October 19, 1781, when Cornwallis surrendered.

When the Constitution of the United States was framed, George Washington presided at the Convention, and James Madison, Edmund Randolph and George Mason were members. Virginia ratified the Constitution on June 25, 1788, declaring at the same time by resolution that the people had a right, whenever they chose to do so, to resume the powers delegated to the Federal Government by the Constitution. At that time Virginia was the leading State in the Union, in wealth and population. She had voluntarily given up her Western territory, out of which many states were afterwards formed.

Mt. Vernon, the home of Washington, and Montpelier, home of Madison.

George Washington was elected the first President of the United States under the Constitution, and after Adams had served four years, the next three Presidents, each of whom served eight years, were all elected from Virginia, giving to that State the honor of furnishing the President of the United States thirty-two of the first thirty-six years of its existence. In later years another citizen of Virginia, John Tyler, and two of her sons, William Henry Harrison and Zachary Taylor, served as President.

Not only in the executive but in the judiciary was Virginia honored. John Marshall of Virginia, one of the greatest judges that ever lived, was Chief Justice of the Supreme Court of the United States for thirty-four years.

When the Gulf States seceded in 1861, Virginia refused at first to go with them; but when the President called upon the State to furnish troops to be used against the Southern States, Virginia denied the right of coercion and promptly joined the Confederacy. The capital of the Confederacy was at once moved to Richmond, and the soil of Virginia became the battleground in the East. Robert E. Lee, "Stonewall" Jackson, and Joseph E. Johnston, who commanded Confederate armies and whose fame filled the world, were all Virginians. Every section of the State was invaded, and when the surrender came at Appomattox, the land was desolate.

In 1863, while the war was going on, Congress admitted the western counties of Virginia to the Union as a State called West Virginia.

Arlington.—Home of General Lee, now a National Cemetery.

The State of Virginia passed

Train transporting coal from the mines to Norfolk.

The Supreme Court has five judges elected for twelve years. Judges of the circuit and corporation courts are elected for eight years. All judges are chosen by the General Assembly. Public corporations are under the supervision of a Corporation Commission consisting of three members, appointed by the Governor and holding office for three years.

Transportation.—In the early days of the State the Chesapeake Bay and its many arms and rivers furnished navigable waterways for transportation. As settlements grew up in the interior and western part of the State, stage lines were built and a great canal was planned along the James River from Richmond across the Alleghany Mountains. Part of this canal was built and used for many years. Steamboats and sailing vessels still furnish means of transportation between points in the tidewater district, but in the interior of the State the canals have been filled up and the stage lines abandoned, and almost every section can now be reached by railroad. Besides the railroad lines, steamships ply regularly between the Virginia seaports and the cities of the world.

Railroads traverse the State in all directions. The most important are the following:

The Southern Railway has two great sections in this State, one extending from Danville through Lynchburg, Charlottesville and Alexandria to Washington; another from Danville through Richmond to deep water at West Point on the York River; a third from Danville to Norfolk.

The Norfolk and Western crosses the State from Norfolk to Bristol, with branches to the mining regions. From Roanoke the Shenandoah Valley division passes northward through the valley up to Hagerstown; there is a branch from Roanoke to Winston, N. C.; a branch from New River to Cincinnati; the Clinch Valley division, from Graham to Norton; and a branch from Lynchburg to Durham, N. C.

The Chesapeake & Ohio crosses the central part of the State from Newport News to the Alleghany Mountains, and on to Cincinnati and Louisville. A branch traverses the valley of the James from Richmond to Clifton Forge.

The Atlantic Coast Line includes the Baltimore & Potomac, the Richmond, Fredericksburg and Potomac, the Richmond and Petersburg, and the Petersburg Railroad. These form a great trunk line between the North and the South.

The Seaboard Air Line connects the leading cities of the Atlantic slope in the Southern States with Norfolk, Richmond and Washington.

The Baltimore & Ohio from Harper's Ferry to Lexington traverses the region lying between the Shenandoah Mountains and the Blue Ridge.

The New York, Philadelphia & Norfolk runs through the Eastern Shore to Cape Charles. Boats connect with Norfolk.

Cities and Towns.

THE TIDEWATER.

Norfolk (pop. 46,624), the historic seaport of Virginia, is situated at the mouth of the Elizabeth River, one of the arms of Hampton Roads. The harbor is spacious, safe and easily accessible, admitting vessels of the largest class to its wharves, and this has made it since colonial days a leading seaport and shipping point. At its wharves are the ships of many nations, which carry the products of this country to every section of the world; superb coastwise steamships which run daily to New York and Boston; and steamboats to Washington, Baltimore and the cities and towns of the tidewater section of Virginia.

The products which Norfolk ships are chiefly gathered up and brought to her wharves by railroads which extend all over the country. There are nine of these railroads, and six of them are trunk lines. The most important are the Norfolk & Western, the Seaboard Air Line, the Southern, the Atlantic Coast Line, the Chesapeake & Ohio, and the New York, Philadelphia & Norfolk Railroads. The two roads last named transfer freight and passengers by ferry boats across Hampton Roads. There are two canals, the Albemarle & Chesapeake, and the Dismal Swamp Canal, which furnish inland waterways southward to Albemarle and Pamlico Sounds.

Norfolk's principal shipments are cotton, in which it ranks third in the United States, vegetables and fruits to Northern markets, lumber and naval stores, provisions and grain, horses and cattle. The immense product of coal along the line of the Norfolk & Western Railroad is brought to Norfolk, where it is sold and shipped to foreign countries. Norfolk's trade in oysters and fish is also valuable.

Norfolk's shipping facilities and the variety and extent of her manufactured articles have built up an important wholesale trade for the city, and a large number of wholesale and commission houses are located here. It is the largest peanut market in the world.

The manufactured articles are commercial fertilizers, roasted coffee and spices, wagons and carriages, cotton-goods, silk, cotton-seed-oil, machinery, barrels and boxes, cigars, furniture, shirts and overalls, steel shutters and blinds. Besides these there are iron and brass factories, shipyards and machine shops, oyster-packing plants, cotton compresses, saw mills and planing mills, and peanut factories.

The business buildings are handsome. The most important public buildings are the Custom House and the Post Office. St. Paul's Church, one of the oldest churches in the city, has in its side a shell fired from a British vessel when Norfolk was bombarded in 1776. Norfolk has a fine system of graded schools, and the private schools are of high character.

Among the suburbs of Norfolk are ***Lambert's Point*** and ***South Norfolk,*** which are really included in the city, ***Pinners,*** and ***West Norfolk,*** which has cedar, lumber and smelting works.

Views of Norfolk, showing Custom House, Commercial Place and the Harbor.

Berkley (pop. 5,000), in Norfolk County, is in the fork of the Eastern and Southern branches of the Elizabeth River. It is connected with Norfolk and Portsmouth by ferries. It is one of the terminals of the Norfolk & Southern Railroad, and the shops of that road are located here. Berkley is noted for its lumber trade and has become an important manufacturing center. It has ship yards, saw mills, hosiery and box factories, and iron, oil, creosoting and guano works. It is a growing residence city, with electric railways and pleasant suburbs which contain almost as large a population as the city itself.

Williamsburg (pop. 2,044), the county-seat of James City County, is the oldest incorporated city in the United States, having received its charter from George III. In early times it was known as "Middle Plantation," but was named Williamsburg in honor of King William. It was the old colonial capital of Virginia and was the great commercial and social center of the State.

Williamsburg.—Duke of Gloucester Street.

Among its historic places are Bruton Parish Church, organized in 1632, the oldest English church now in use in this country; the Court-house, built in 1769, designed by Sir Christopher Wren; and the old "Powder Horn," built by Alexander Spotswood in 1714.

Williamsburg is noted as the seat of William and Mary College, founded in 1693. George Washington was at one time Chancellor of this institution, and Presidents Monroe, Madison and Tyler were graduated from it. The Hospital for the Insane, located here, is the oldest institution of the kind in this country.

FALL LINE.

Richmond (pop. 85,050), the capital, is the largest city in the State, and fourth in population in the South. The city was laid out in 1737 by Col. William Byrd, near the spot where once stood the chief village of Powhatan.

Its location at the head of navigation on the James River made it in early days the distributing point for merchandise, which came to its wharves by water and which was sold to the planters of the rich section lying west. As the country developed, great wholesale houses were located here, and to-day Richmond jobbers sell goods not only throughout Virginia but all over the West and South.

City Hall and Washington Statue.

The commerce of Richmond brought means of transportation. Before the days of railroads the James River and Kanawha Canal was built from Richmond along the bank of the James River up into the mountains. In the early days of railroading, lines were extended into the city, and these have increased until to-day Richmond is connected by rail with every important city in the land. The old canal has been abandoned and a railroad line built along the tow-path.

Broad Street.

The falls of the river furnish cheap water power which many years ago made Richmond a manufacturing center. Flour mills and other manufacturing plants first grew up along the river side where the water-power could be utilized. But cheap coal has made cheap steam-power, and immense manufacturing establishments are now located in various quarters of the city. Richmond to-day ranks first in the State and second in the South as a manufacturing city. Her manufacturers ship their products all over the world.

Richmond views.—State Capitol.

The manufacturing interests of Richmond include tobacco and cigarette factories, a car factory, a bag factory, a baking powder factory, and a meat juice factory, flour mills with an immense export trade, the Tredegar Iron Works, which manufactured cannon for the Confederacy, the Old Dominion Iron and Nail Works, the Richmond Locomotive Works, car axle works, machine, iron and stove works, plow, engine, pump and carriage factories, fertilizer works, cedar works, sash, door and planing mills, paper mills and printing establishments.

Success in commerce and manufacture has made Richmond a very wealthy city. Her banks have large capital, and in the volume of the business handled by them the city ranks third in the South. Besides the banks, there are safe deposit and trust companies, three successful fire insurance and two life insurance companies. Besides the home companies, all the principal insurance companies have general agencies in the city. The financiers of Richmond have been important factors in building and controlling railroads in the South.

Richmond has had a most interesting history. It became the capital of Virginia in 1779, and was also the capital of the Confederacy from 1861 to 1865. Near it are some of the most famous battlefields of the war between the States. The Confederate Congress sat in the State Capitol building. Among the other buildings of interest are the Confederate Museum, which was the "White House" of the Confederacy; General R. E. Lee's residence, now the home of the Virginia Historical Society; and St. John's Church, in which Patrick Henry made his famous speech.

Richmond is a beautiful city. The Capitol, a historic building modeled after a Roman temple, is beautifully located in a large park near the center of the city. In the rotunda of the Capitol is the famous Houdon's statue of Washington, and a bust of Lafayette. Nearby is the City Hall, one of the finest in the country. In Capitol Square stand the famous equestrian statue of Washington and the monument to Stonewall Jackson; in the southwestern part of the Square stand the marble statue of Henry Clay and the old Bell Tower; on Franklin Street is the Lee monument; on Hermitage Road the statue of General A. P. Hill; and on Libby's Hill stands the beautiful monument to the Sailors and Soldiers of the Confederacy. In Hollywood Cemetery are buried Jefferson Davis, James Monroe, John Tyler, John Randolph of Roanoke, and Commodore Maury. Franklin and Grace, the two principal residence streets, are among the most beautiful in America.

Richmond is famous for its educational and benevolent institutions. The public schools are of the highest character, and include graded or district schools, high school for boys and girls, and a high and normal school for colored youth. Richmond College, the Union Theological Seminary, the Woman's College of Richmond, the University College of Medicine and the Medical College of Virginia, for white students; and the Virginia Union University and Hartshorn Memorial College, for colored students, are located here. McGuire's School, Nolley's School and the Richmond Academy are noted preparatory schools for boys. Near the city is the Laurel Industrial School, established and maintained by the Prison Association of Virginia for the training and reformation of juvenile delinquents, which is the only institution of the kind in the South.

Franklin Street.

Ashland (pop. 1,147), in Hanover County, is a town on the Richmond, Fredericksburg & Potomac Railroad. It is sixteen miles from Richmond and is a place of residence for many persons engaged in business in that city. Close by is the birthplace of Henry Clay, after whose Kentucky home the town was named. It is the seat of Randolph-Macon College.

Lynchburg.—Showing the James River and the immense manufacturing plants along its bank. Notice also the tall tobacco factories and business buildings.

Farmville (pop. 2,471), the county-seat of Prince Edward County, is on the Appomattox River. It is on the N. & W. R.R., and is the terminus of the Farmville & Powhatan Railroad. It is engaged chiefly in the manufacture of tobacco, in which it has an immense trade. There is a large foundry here and two banks. The Farmville Lithia Springs are well known, and the water is bottled and shipped in large quantities. Farmville is the seat of the State Female Normal School, and not far from the town is Hampden-Sidney College.

Martinsville (pop. 2,384), the county-seat of Henry County, is at the intersection of the Danville & Western and the Shenandoah division of the Norfolk & Western Railroads. It is a most important tobacco market, and has a great number of plug and smoking tobacco factories, prizeries and warehouses. It has also brick works, flour and saw mills, an iron foundry, and a wagon factory. It has public graded and high schools and a seminary for girls.

Chatham (pop. 918), county-seat of Pittsylvania, the largest county in the State, is on the main line of the Southern Railway, between Lynchburg and Danville.

Danville (pop. 16,520) is on both sides of the Dan River at the falls, where it cuts its way through the foot-hills of the Blue Ridge. It is in the heart of the finest tobacco district of the United States, and has many large tobacco warehouses. More leaf tobacco is handled here than in any other city in Virginia.

Danville was for years the western terminus of the famous Richmond & Danville Railroad, which here met the Virginia Midland from Lynchburg and the Piedmont Air Line from Charlotte. These roads are now all incorporated in the Southern Railway System. Danville enterprise also built the Danville & Western Railroad and the Atlantic & Danville. These made Danville an important trade center.

The splendid water-power from the falls of the Dan River has been utilized by a canal, and Danville has become an important manufacturing city. By the census of 1900 it ranks third in the State, but in proportion to its population it ranks first. The most important manufacturing interest is tobacco, but there are also three large cotton mills and other important interests. These include wagons, buggies, barrels, furniture, flour, lumber, brick, suspenders and overalls.

Danville is a compact, well-built city, extending from the river up on the hills on both sides. Roanoke Female College, Randolph-Macon Institute, and the Military Institute are located here, and the graded schools are of the highest character.

Lynchburg (pop. 18,891), near the geographical center of the State, is on the James River, at the point where it cuts its way through the foot-hills of the Blue Ridge. In early days travelers took advantage of the path cut by the James in going from the Coastal Plain up into the mountains, and crossed the river at this point, first called Lynch's Ferry. At the ferry the village of Lynchburg soon sprang up and became a trading center for the surrounding country. The old stage roads running north and south and east and west crossed here, and the James River and Kanawha Canal furnished a waterway for commerce.

When the great trunk railways, now called the Southern, the Norfolk & Western, and the Chesapeake & Ohio were built, they followed the same easy lines of travel and intersected at Lynchburg. These have made Lynchburg the commercial metropolis of the Piedmont section. At the center of a rich tobacco-growing region, it became an important tobacco market. As the city grew in wealth, jobbing houses were established here, and to-day it sells goods over an extensive area. These houses employ a large number of traveling men, and their annual sales reach many millions of dollars.

The falls of the river give splendid water-power, which was long ago utilized, and Lynchburg at an early day became a manufacturing city. Its first manufacturing interest was tobacco, which is still its leading industry. Its other manufactures are numerous and varied, embracing a large number of articles. It has woolen and cotton mills, iron works, foundries, machine shops, nail works, pipe foundries, paper mills, and factories for manufacturing shoes, knit goods, furniture, paper boxes, leather, harness and many smaller articles.

Lynchburg is a picturesque city. The hills upon which it is built rise abruptly from the river, and streets are laid out on terraces along their sides. The business buildings and private residences are very handsome.

The Randolph-Macon Woman's College and the Piedmont Business College are located here. The graded schools are of the highest character and include high school departments for boys and girls.

Monticello, the home of Thomas Jefferson, near Charlottesville.

Danville, showing Main Street, looking toward the river from the Post Office.

Bedford City (pop. 2,416), the county-seat of Bedford County, is beautifully situated among the mountains, and is a popular summer resort. The scenery in the vicinity is very picturesque, the most striking feature being the Peaks of Otter, eight miles distant. The chief industry is manufacturing tobacco, but there are also many other manufactures, including a woolen mill where a good quality of kersey cloth is made, flour mills, canning factories and machine works. Bedford City has Randolph-Macon Academy, Belmont Seminary, the Union Coöperative School and public schools.

Charlottesville (pop. 6,449), at the crossing of the Southern and the C. & O. Railroad, is famous as the seat of the University of Virginia, and as the home of Thomas Jefferson. It is the county-seat of Albemarle County, and a market for grapes, wines and fruits, including the famous Albemarle pippins.

Charlottesville has large woolen mills, lumber and flouring mills, a printing establishment where law books are published, and knit goods and overall factories. The Charlottesville Woolen Mills supply West Point and officers of the United States Army with cloth for uniforms.

The educational institutions are the University of Virginia, Albemarle Female Institute, Pantops Academy, Piedmont Female Institute and the University School. The city has first-class graded schools. "Monticello," the home of Jefferson, and "Monroe Hill," the home of Monroe, are near by.

Scottsville (pop. 1,248), in Albemarle County, is on the James River Division of the Southern R.R. It has a bank, and is the most important trading point of the lower section of the county.

Culpeper (pop. 1,618), the county-seat of Culpeper County, is a progressive town on the Southern Railroad. It has large machine-shops, and manufactures hardware and flour. The battles of Cedar Mountain and Brandy Station were fought near by.

Warrenton (pop. 1,627), the county-seat of Fauquier County, is the terminus of the Warrenton branch railway connecting it with the Southern and the Chesapeake & Ohio Railroads. It is a popular resort the year round: in summer, for visitors seeking a change from city life; and in winter, for those requiring a milder climate than that of the North. It is a training ground for horses for the New York market, and the shipping point for great quantities of cattle, sheep and hogs. It has two banks, and flour and lumber mills.

Leesburg (pop. 1,513), the county-seat of Loudoun County, is on a branch of the Southern R.R., near the Potomac River. It has a large planing mill, cooperage works, and manufactures wagons, carriages, harness and flour. It has a large local trade, two banks, good commercial facilities, graded and high schools and a business college.

Bird's-eye view of Staunton.

THE GREAT VALLEY.

Berryville (pop. 938), the county-seat of Clarke County, is on the Shenandoah division of the N. & W. R.R. In Revolutionary days it was the scene of so many combats that it was known as "Battletown." It is lighted by acetylene gas, and has a water supply brought from the Blue Ridge Mountains, a distance of six miles.

Lexington and the mountains beyond.

Winchester (pop. 5,161), the county-seat of Frederick County, is on the Shenandoah Valley Division of the B. & O. R.R., and is also the terminus of the Cumberland Valley Railroad. It is one of the historic cities of Virginia, and was chartered in 1752. It is closely identified with Washington's early military service, and old Fort Loudoun was built at this place by him in 1756. It was famous during the Confederate struggle, and a battle was fought in the streets of the city.

Winchester is an important trade center, and manufactures flour, woolen goods, hosiery, cigars, leather, gloves, brick, brooms, strawboard, chocolate and barrels, and has sumac mills and granite quarries.

Fairfax College, Valley Female College and the Episcopal Female Institute are located here, and the city has excellent graded schools.

In the center of Harrisonburg.

Front Royal (pop. 1,005), the county-seat of Warren County, is on the Shenandoah division of the N. & W. R.R. It manufactures cigars, handles, telegraph pins and boxes, has a forty-loom tapestry manufactory and two banks. A branch of Randolph-Macon College is located here. ***Bentonville*** and ***Riverton,*** both on the railroad, are also important towns of Warren County.

Woodstock (pop. 1,069), the county-seat of Shenandoah County, on the Valley branch of the S. R.R., in a rich section. It manufactures brick, sash and doors, staves and barrel heads, and has banks and trust companies.

Luray (pop. 1,147), the county-seat of Page County, is on the Shenandoah division of the N. & W. R.R., a few miles from the river. The town has a large tannery, several smaller industries and two banks. Near it are the famous Caverns of Luray.

Shenandoah (pop. 1,220) is in Page County, on the southern fork of the Shenandoah River. The Norfolk & Western Railroad passes through it, and some of its machine shops are located here. Shenandoah has a blast furnace capable of producing one hundred tons of iron a day.

Harrisonburg (pop. 3,521), the county-seat of Rockingham County, is situated at the junction of the Southern, the Valley branch of the Baltimore & Ohio, and the Chesapeake & Western Railroads. It is in the beautiful Shenandoah Valley and is an active business center. It has a large tannery, flouring mills and other manufacturing industries.

Staunton (pop. 7,289), in Augusta County, is the largest and most flourishing city in the Shenandoah Valley. It is beautifully situated in the midst of a fertile and picturesque region, at an elevation of 1,500 feet above the sea level. The Chesapeake & Ohio and Baltimore & Ohio Railroads cross here, giving the city exceptional shipping facilities. It has wagon factories, fertilizer factories and an organ factory. The organ factory has an output of 5,000 organs per annum. Staunton has one of the largest flour mills in the State, two large ice factories, and does an unusually large jobbing business. It is also the banking center for this section of the country, having four banks with large capital.

Staunton is a favorite residence city, with two pretty parks, and is noted as an educational center, the Mary Baldwin Seminary, Virginia Female Institute, Staunton Military Academy, Dunsmore Business College, and Virginia School for the Deaf and the Blind all being located here. Its public schools are excellent. The Western State Hospital for the Insane is located at Staunton.

Basic City (pop. 1,270) is in Augusta County at the foot of the Blue Ridge, at the junction of the C. & O. and the Shenandoah branch of the N. & W. R.R. Furniture and woolen goods are manufactured.

Lexington (pop. 3,203), the county-seat of Rockbridge County, is at the junction of the Valley branch of the B. & O. and the James River branch of the C. & O. Railroads. It has two banks, a large local trade, and is the commercial center of the county.

Lexington is noted as the seat of Washington and Lee University, and of the Virginia Military Institute, the "West Point of the South." General Robert E. Lee was for a number of years President of the University, and Stonewall Jackson was a professor in the Military Institute at the opening of the war between the States. They are both buried at Lexington.

Buena Vista (pop. 2,388), in Rockbridge County, on the Shenandoah division of the N. & W. R.R., is a flourishing young city. The iron mines in the vicinity are worked extensively, and the product is handled at Buena Vista. It has a large blast furnace, boiler and foundry works, fire-brick works, tannery, paper mill and hardwood works, as well as smaller industries. The city is healthfully located high up in the Blue Ridge Mountains, and is a pleasant place of residence. A college for young ladies is located here.

One of Winchester's handsome residences.

Roanoke (pop. 21,495) is in the Great Valley, between the Blue Ridge and the ranges of the Alleghany Mountains, and is over a thousand feet above sea level. For many years it was an unimportant station on the railroad from Norfolk to Bristol, which in 1881 became the Norfolk & Western Railroad. The next year the Shenandoah Valley Railroad was extended to this point and the name Roanoke was then given to the junction. It has since grown to be one of the great cities of the State. A branch of the Norfolk & Western Railroad extends to Winston-Salem in North Carolina, which adds a railroad line southward to the shipping advantages of the city.

The location at this point of the shops of the Norfolk & Western Railroad made it at once an industrial city, and with coal and iron both near by it has become the center of the iron industry of the State. It has three modern blast furnaces, two rolling mills, bridge and iron works, machine works and foundries. It has also a large cotton mill and other important manufacturing interests. These include cigar, carriage, sash, door and blind factories, and brick works. The offices for the management of the Norfolk & Western Railroad are located here.

The educational advantages of Roanoke are of the highest character. They include first-class graded schools, a college for young ladies, Alleghany Institute for boys, and the Normal Business College. Hollins Institute and Roanoke College, both noted educational institutions, are within a short distance.

Because of its rapid growth, Roanoke has been called the "Magic City."

Stone—Roanoke, Va.

Vinton (pop. 1,428), three miles east of Roanoke City, on the Norfolk & Western, is situated in a rich agricultural region. It is connected with Roanoke by an electric car line, and is a town of homes.

Roanoke.—Immense shops of the N. & W. R.R. and the Hotel Roanoke.

Salem (3,412), the county-seat of Roanoke County, on the N. & W. R.R., is in a picturesque region, and is one of the most attractive places in Virginia. It is noted for its healthfulness, and is a popular resort for summer visitors. It has two banks and a trust company, machine and iron works, brick and tile works, two large tanneries, a blast furnace, flour and woolen mills, and a cigarette-machine factory. Roanoke College, the Baptist Orphanage of Virginia, and an Orphan Home of the Lutheran Church are located here.

Radford (3,344), in Montgomery County, on the east bank of New River, is on the main line of the N. & W. R.R., at the junction of the Virginia & Ohio branch. It is beautifully situated on the terraced hills which rise up from the river to a considerable height. Its principal industries are an iron furnace, cast-iron pipe works, flour mills, and factories where wagon hubs and spokes, skewers and handles are made. It has a national bank and a trust company. St. Albans School and Bell Heth Academy are two good private schools, and the city has first-class public schools. ***East Radford*** (pop. 2,009) is one mile from Radford, on the N. & W. R.R.

Bertha Zinc Works at Pulaski City.

Alkali works at Saltville.

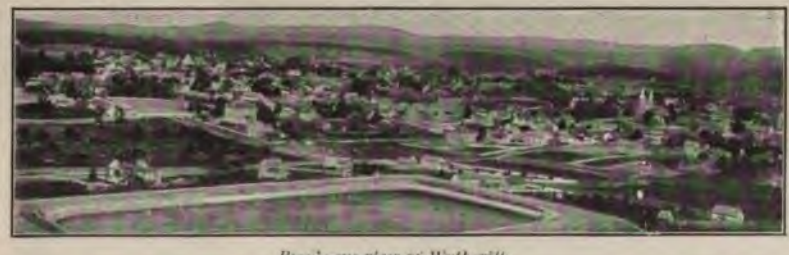
Pulaski City (pop. 2,813), the county-seat of Pulaski County, on the North Carolina Division of the N. & W. R.R., is beautifully located among the mountains, one point, Peak Knob, rising fifteen hundred feet above the town. It is noted for its zinc works; and Bertha zinc, which is manufactured here, has been adopted by the United States and the British Governments as their standard of purity. The mines are at Bertha. Pulaski also has iron furnaces and manufactures lumber.

Wytheville (pop. 3,003), the county-seat of Wythe County, on the main line of the N. & W. R.R., is a well-known summer resort. It is twenty-three hundred feet above sea level, in a picturesque region, and has valuable mineral springs. Henry Clay practiced law here and was a partner of Judge Wythe, for whom the town was named. Daniel Webster and John C. Calhoun were frequent visitors, and President Jackson, journeying from his Kentucky home to Washington, always stopped at Wytheville. It has woolen and knitting mills, sash, door and blind factories, carriage works and foundries.

Rural Retreat (pop. 1,000), in the same county, is also on the N. & W. R.R. There is a large car-wheel company located here, and a collar and harness factory.

Marion (pop. 2,045), the county-seat of Smyth County, is situated at the junction of the Marion & Rye Valley and the N. & W. Railroads. Two wagon factories give employment to a number of hands. There is also a furniture factory here, and there are large quarries of limestone rock near the town. Marion Female College is a successful educational institution. The Southwestern State Hospital for the insane is located here.

Saltville (pop. 1,051), in Smyth County, the terminus of a branch of the N. & W. R.R., is noted for its alkali works, where salt, soda ash, caustic soda and bicarbonate of soda are produced. The quarry is about three and a half miles from the alkali works, and the limestone is brought to the works by means of a cable line of iron buckets. The buckets carry about five hundred pounds of limestone, and in some places they are two hundred and fifty feet above the ground. During the war between the States Saltville furnished salt for the Confederate States, and was the objective point of many Federal attacks.



Bird's-eye view of Wytheville.

Abingdon (pop. 1,396), the county-seat of Washington County, on the main line of the N. & W. R.R., is the oldest town west of the Alleghanies. It is situated in a rich coal, iron and lumber region. It has lumber mills, wagon works and tobacco factories, and ships cattle, horses, mules and sheep in large numbers. It is noted for its educational institutions, among which are Martha Washington College and Stonewall Jackson Institute, both colleges for young ladies.

Bristol is at the junction of two great trunk railroads, and three shorter railroads extend from this point to the rich mineral and timber belts lying east and west. These make it an important lumber market and business center. It has saw mills and planing mills, an iron furnace, tannery, pulp mills, tobacco factories, and many other important manufacturing interests. Two tobacco warehouses, several wholesale houses and an abattoir are located here. The educational institutions include excellent graded schools for the city, King College, Sullins College and Southwest Virginia Institute. Bristol is half in Washington County, Virginia, and half in Sullivan County, Tennessee, the state line running through the center of the principal business street. The total population is 9,850.

Va. State Street, Bristol. Tenn.

ALLEGHANY MOUNTAINS.

Clifton Forge (pop. 3,212), in Alleghany County, is the center of the iron industry of that region, six furnaces being located in the vicinity. It is the terminus of the Eastern, Western and James River Divisions of the Chesapeake & Ohio Railway, and has extensive railway workshops. Two miles from Clifton Forge, in the same county, is the village of ***Iron Gate.***

Covington (pop. 2,850), the county-seat of Alleghany County, is located on the Jackson River in one of the most picturesque valleys of the Alleghanies. A branch of the C. & O. Railway connects it with Virginia Hot Springs, twenty-five miles distant. It has iron furnaces and foundries, a paper mill, flouring mills and a tannery.

Bird's-eye view of Salem.

Pocahontas (pop. 2,789), in the northeastern part of Tazewell County, is the oldest town in the coal field, and the trading center for all that section. The largest coal operations are located here, and it has the greatest number of coke ovens. It ships coal, coke and lumber in great quantities.

Graham (1,554), in Tazewell County, is on the border between Virginia and West Virginia. It is on a branch of the Blue Stone River, and the N. & W. R.R. passes through the town. It has iron works, lumber and planing mills, and a mattress factory.

Tazewell (1,096), the county-seat of Tazewell County, is on the N. & W. Railroad. It is situated in the blue-grass section, near the coal-fields, in a high and healthy location. It has steam granite and marble works, planing mills, two banks and an insurance company, and manufactures harness. Tazewell College is a well-known educational institution. One mile distant is the village of ***North Tazewell,*** on the same railroad.

Big Stone Gap (pop. 1,617), in Wise County, is at the junction of the Virginia and Southwestern with the Louisville and Nashville R.R. It lies in the valley of Powell's River, surrounded by the high peaks of Cumberland, Stone and other mountains, which give it a beautiful and picturesque scenery. It is in the center of a mining region and exports coal and lumber. It has a tannery and other smaller industries.

Norton (pop. 2,009), in Wise County, is the southern terminus of the Clinch Valley Division of the N. & W. R.R., and the northern terminus of the Louisville & Nashville. It has two national banks, a mattress factory, and ships lumber. The Norton Coal Company operates a large mine here.

View from hotel at Covington.—Notice station and furnace.